STEEL
The Metalworking Weekly

SEPTEMBER 5, 1955
Vol. 137 No. 10

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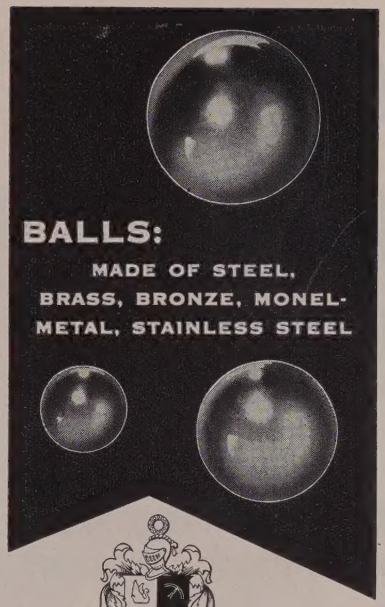
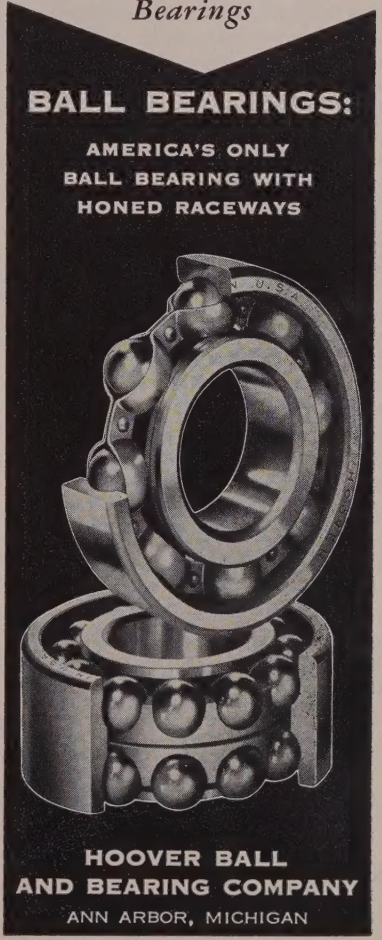
Editorial & Business Staffs, 16. Advertising Index, 151. Editorial Index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 W. 39th St., New York 18, N.Y.

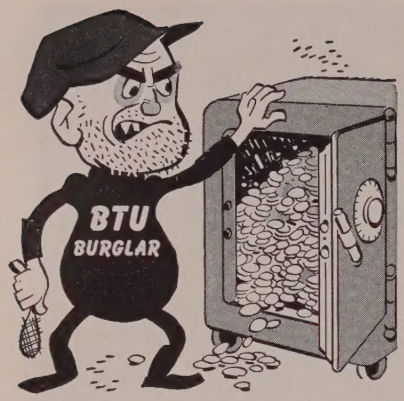
ublished every Monday by The Penton Publishing Co., Penton Bldg., Cleveland 13, O. Subscription the United States and its possessions, Canada, Mexico, Cuba, Central and South America, one ear, $7.50; two years, $15; all other countries, one year, $20. Single copies (current issues), 50 nts. Metalworking Yearbook issue, $2. Accepted as controlled circulation publication at Cleveand. Copyright, 1955, The Penton Publishing Co.



HOOVER

The Aristocrat of Bearings





Small change compared with the

HEAT I'm stealing from their furnaces

No piker, this BTU Burglar! The heat he steals in a single industrial furnace can run into billions of BTU's each year. It's like having several thousand dollars stolen right out of the safe.

Typical example: One of the six malleable annealing ovens in a midwest plant was rebuilt with *lightweight* B&W Insulating Firebrick. Then, a study was made of fuel costs. A savings of 36%, $1,071.50 per year, on this one oven showed that about $6,429 worth of fuel per year had been wasted—a sum easily turned from loss into profit by switching to B & W Insulating Firebrick.

Heavy furnace linings waste your fuel dollars two ways: They soak up and hold a lot of heat which is lost when the furnace is cooled; and they conduct and lose too much heat through the walls. Lightweight insulating firebrick, containing millions of tiny air cells, heat up and cool quickly, absorbing and storing very little heat. Also, they resist heat flow, keeping it in the furnace to do productive work.

The lighter the insulating firebrick the more you save. The lightest you can buy are B&W Insulating Firebrick.

This simple way to cut costs deserves the immediate attention of those responsible for furnace operations in your plant. For detailed information, write to B&W, or contact the B&W Refractories Engineer in your locality.

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GENERAL OFFICES: 161 EAST 42ND ST., NEW YORK 17, N.Y.
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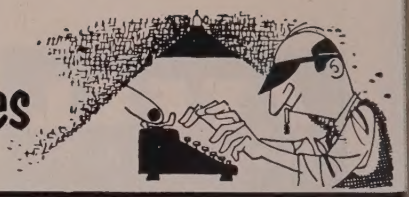
R-502

behind the scenes



Editor Natural at Helm

The photoengraver who made the halftone reproduced below confessed to us privately that he didn't know what he was making. "If my own mother," he declared, "put a gun to my head and demanded to know what it was, I wouldn't have been able to tell her."

Well, lay that pistol down, mother; it's a picture of STEEL's editor, Irwin Such, toying with the tiller of an early car in the famous Unter-

turkheim automobile museum of the Daimler-Benz AG, claimed as the world's oldest automobile factory.

When Irwin was gathering industrial impressions on Western Germany for presentation in STEEL beginning next week, he devoted much attention to the great automotive empire that grew from separate patents granted 70 years ago to Gottlieb Daimler and Karl Benz. Daimler and Benz merged in 1926.

Their plants were 80 per cent destroyed in World War II; now they're back in full production, Irwin was photographed in their museum in 1955; we received the print two weeks ago; and the photoengraver with the pistol-packin' mamma made the halftone at 11:30 p.m. Aug. 24.

Pss-sst! New Assistant!

In the stirring, irresponsible days of journalism, ambitious publishers were not above pirating their competition's help. Indeed, there were few lengths to which aggressive publishers would not go to do another paper in the eye, or beat their peers to the paragraphic punch.

We thought we had heard about all the tricks and dodges employed to bolster an editorial staff, until STEEL hired Andrew Donald Postma, formerly of the U. S. Army Counter Intelligence Corps. Surely the acquisition of this professional sleuth as assistant editor will entitle our contemporaries to cry "dirty pool".

We interviewed Donald, and came away with the impression that television dramas featuring counter intelligence men are miscast.

Our man is young, mild, quiet and gives the impression of being more at home wrestling with a crossword puzzle than with heavily armed subversives. The interview didn't really amount to anything. To every question relating to his training or activities he beamed politely and remarked that we were off limits.

He was so well trained in de-railing snoopers we counted it a distinct triumph to force from him the confession that he was a graduate of the University of Michigan, and that his wife's name was Jean. In an unguarded moment—and he may be obliged to explain this to some U. S. spy brass—he revealed that he came from Holland, Mich.

As assistant editor in STEEL's news section, there is no telling how far he will go to get the facts.

Ciphers Again

The cryptocipher was as follows:

```
269340
273218
169433
218340
------
930331
```

Donald W. Braatz sent in the first correct answer. Donald works in the engineering department of the Creamery Package Mfg. Co., Lake Mills, Wis., and after solving our puzzle he sent in one of his own:

```
        XX8XX
XX/XXXXXXX
   XXX
   ----
    XXX
    XXX
    ---
     XX
     XX
     ---
      XXX
      XXX
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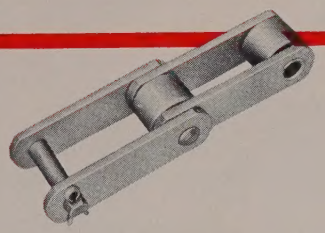
Shrdlu

(Metalworking Outlook—Page 35)

For longer chain life, here's
ess bushing and joint wear



Large-diameter rollers of Link-Belt SS chains reduce chain-pull due to frictional resistance.

Link-Belt Class SS roller chain assures steady, even flow of fabricated products from medium-temperature industrial oven manufactured by The W. W. Sly Manufacturing Co., Cleveland, Ohio. Link-Belt precision steel roller chain and roller bearing blocks are also used.

LINK-BELT SS roller chains are designed for abrasive, heavy-duty service

FOR hard-working drives and conveyors, choose Link-Belt SS bushed roller chain. Its hardened steel joint assures longer life in gritty and abrasive applications. Accurately machined parts provide a firm, tight fit of pins and bushings in the steel sidebars. In addition, accurate control of raw material specifications and manufacturing processes results in uniformity . . . longer life.

Whatever your particular chain requirements in regard to speed, weight of loads or severity of service—the completeness of the Link-Belt line will provide the right answer. No other manufacturer offers such a broad range of silent and roller chains—of cast, combination, forged and fabricated types. And a complete selection of attachments permits efficient adaptation to varied services.

For help with any chain problem—big or small—call your local Link-Belt office or authorized stock-carrying distributor. He is qualified to make an unbiased recommendation of the one chain best-suited to your exact needs.

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CHAINS AND SPROCKETS

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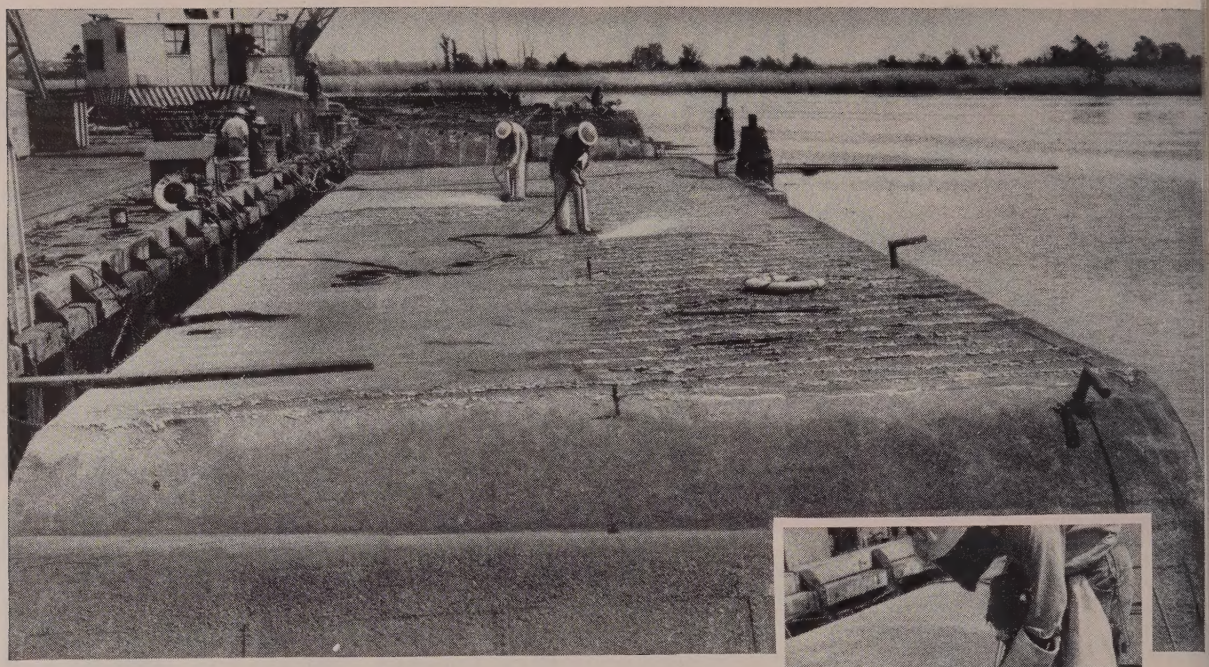

This C-51 deseaming blowpipe opens transverse plate welds in steel barge bottoms 7 times faster than the previously used process.

Barges get new lease on life...

FOR 70% LESS COST

Deseaming blowpipes have cut the time required to remove these steel barge bottoms from 4 days per barge, to only 1½—and cut costs $500 per barge....

In this operation, the barges were rolled over in the water. Bottom plates were deseamed and removed, and then new plates UNIONMELT welded in position. Before removing the old plates, it was necessary to "open" seam welds, plug welds, and rivets. The deseaming blowpipes did this work with maximum speed and economy—and with minimum nicking into the support members beneath the plates.

Deseaming blowpipes operate with a low-velocity oxygen stream, and make a wide pass in metal at high speeds. The depth of penetration is controlled by regulating oxygen pressure. Lightweight, easy to handle deseaming blowpipes are speeding production and repair operations throughout industry.

For more information on this or any other of LINDE's modern, money saving processes, call your local LINDE representative. Start saving now, call him today.

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(formerly Dominion Oxygen Company)

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they grip tight...seal tight
—they're made of

CRUCIBLE
stainless steel cold heading wire

These *Tuff-Tite** fasteners, made by Townsend Company, New Brighton, Pa., have a neoprene washer preassembled into the head. They stop leaks . . . hold tight even where there's severe vibration . . . seal out moisture effectively.

Of course high speed production of these fasteners, like other types of screws, bolts, rivets and pins, demands cold heading wire with optimum workability. That means wire that's structurally sound and metallurgically uniform . . . with sufficient ductility to make forming easy . . . and with good tensile strength.

Crucible stainless steel cold heading wire has all these qualities — *plus* exceptional corrosion-resistance. That's why Crucible Types 305 and 410 stainless are used for the new *Tuff-Tite* fasteners, as well as for many other types of fasteners.

Crucible will fill your stainless cold heading wire needs quickly and efficiently . . . in the grade and size that best fits your application. Talk over your production requirements with your Crucible representative soon. *Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

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Write now for your free copy of Crucible's new 32-page booklet on Rezistal stainless steel wire.

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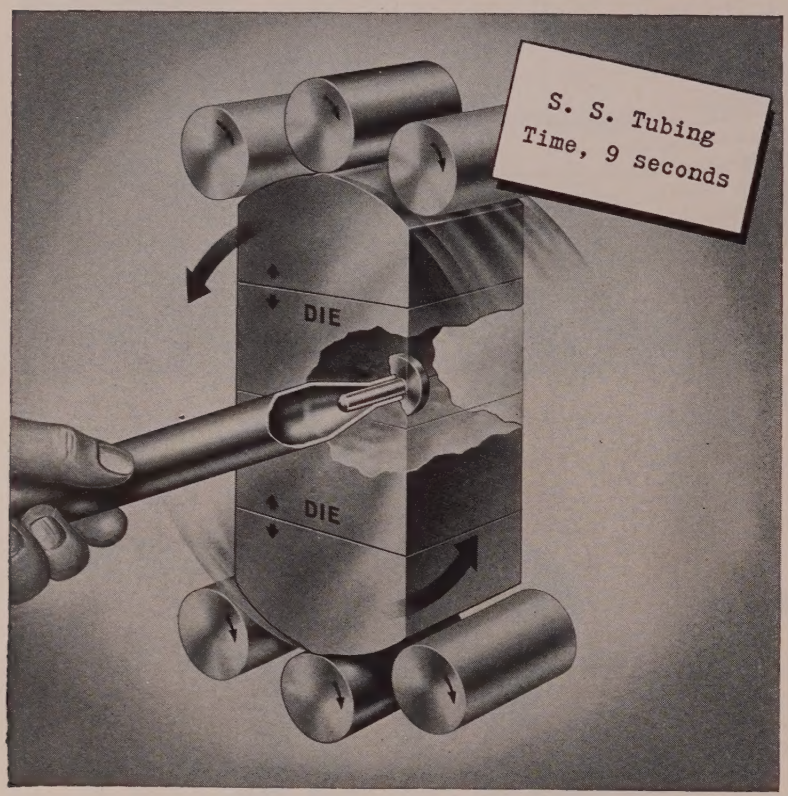
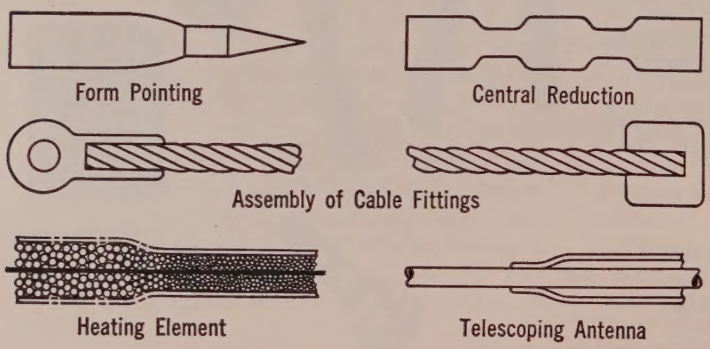
Crucible Steel Company of America

GET MORE PARTS
Instead of chips and scrap
with ROTARY SWAGING



OTHER SWAGING EXAMPLES:



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LETTERS
TO THE EDITORS

Stainless Users Like Data

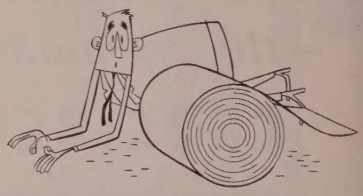
We wish to use the articles, "Heat Treating Stainless Steels" Parts I and II (Aug. 8, page 70 and Aug. 15, page 158), for foreman instruction. We believe their simplicity (and completeness) will be most helpful.

Donald G. Crowell
Crowell Tube Co. Inc.
Lexington, Mass.

We have a problem of heat treating 410 stainless to give maximum ease of machining while keeping the steel to a high yield. These articles have much information on this. We would appreciate three copies.

M. V. Marrs
L. & F. Machine Co.
Huntington Park, Calif.

Strippers Trip on Price



We were so impressed by the article, "Strip Producers Back Down" (Aug. 1, page 113), that we would like our employees and customers to read it. May we have 250 reprints.

We take this opportunity to extend congratulations on the general excellence of your publication.

James J. Dolan
Dolan Steel Co. Inc.
Bridgeport, Conn.

Trade Show Planning

We would like permission to reproduce the article, "Preplanned Trade Shows Pay Off" (July 18, page 57). It has good suggestions we would like to pass along to exhibitors in our 1956 exhibition.

A. B. Campbell
Executive Secretary
National Association of Corrosion Engineers
Houston

Plant Layout Approved

Congratulations on your 1955 Program for Management. The third article, "Better Plant Layout" (April 18, page 93), is one of the best I have read on this subject.

R. Shearer
Standards Manager
Canada Cycle & Motor Co. Ltd.
Weston, Ont.
Canada

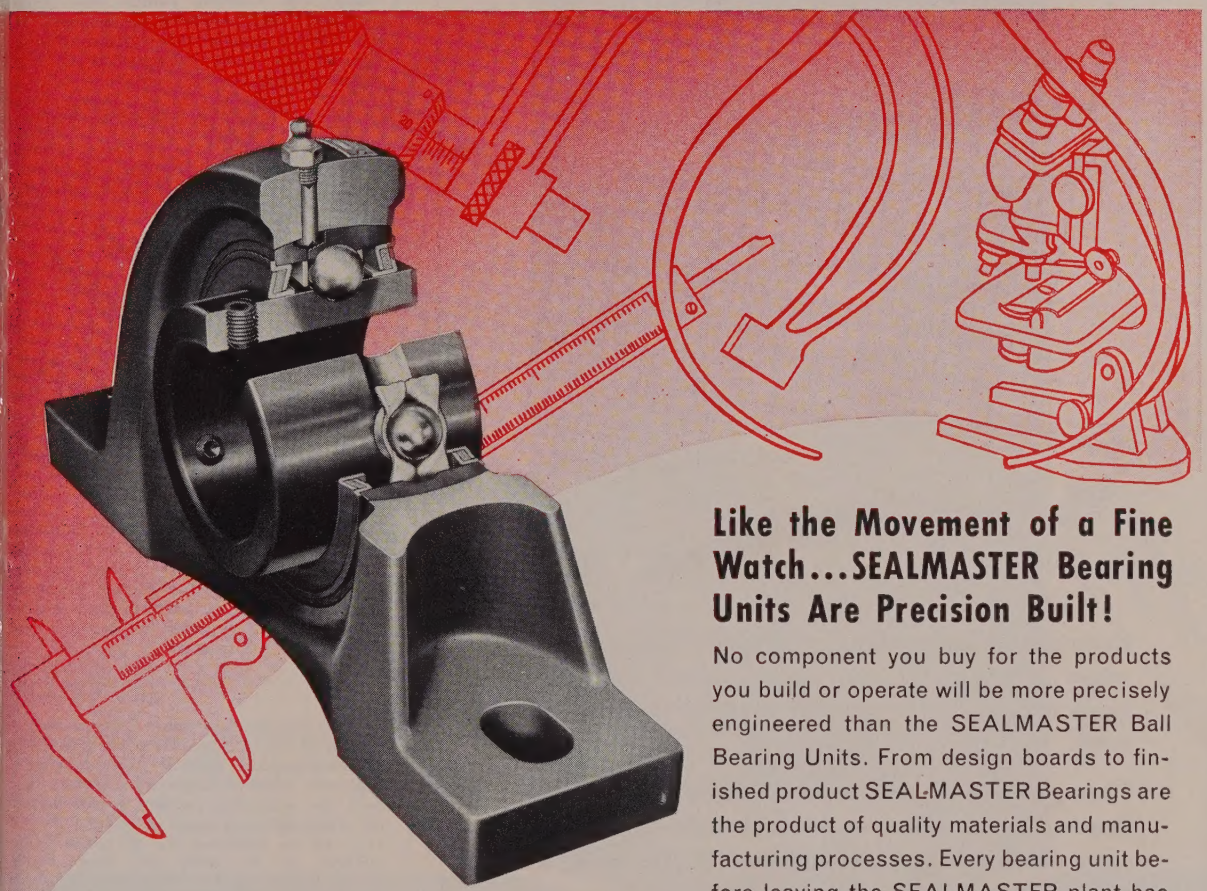
Rubber Claim Challenged

The first item in the Technical Outlook column of June 6 (page 79) reads: "General Electric says it has developed a new type silicone rubber that remains flexible at 600° F." This implies it is superior on heat resistance to any silicone rubber available.

While this rubber, SE-750A, shows excellent heat stability at 600°F (com-

(Please turn to page 12)

SYMBOLS OF PRECISION



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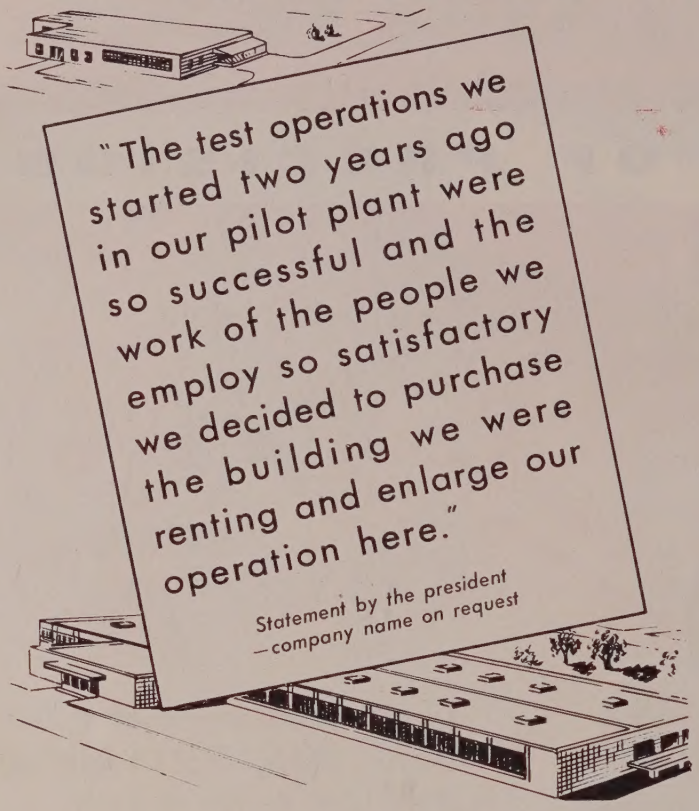
No component you buy for the products you build or operate will be more precisely engineered than the SEALMASTER Ball Bearing Units. From design boards to finished product SEALMASTER Bearings are the product of quality materials and manufacturing processes. Every bearing unit before leaving the SEALMASTER plant has been checked and rechecked to be certain it is worthy of bearing the SEALMASTER trademark. This insurance of quality has made the word SEALMASTER symbolic with Precision wherever bearings are used.

Write for your FREE copy of SEALMASTER Catalog 454.

SEALMASTER BEARINGS A DIVISION OF STEPHENS-ADAMSON MFG. CO., 99 RIDGEWAY AVE., AURORA, ILL.

Here's what a cautious company learned about NORTH CAROLINA


"The test operations we started two years ago in our pilot plant were so successful and the work of the people we employ so satisfactory we decided to purchase the building we were renting and enlarge our operation here."
Statement by the president —company name on request

Experiences like the one above explain why so many companies select not just one site but second and multiple locations in North Carolina, the South's leading industrial State.

These are diversified industries — ranging from Aircraft to Zippers, large companies and small, with many different operating problems and requirements. In every case, though, efficient production and cooperative labor are outstanding reasons for satisfaction in North Carolina.

Investigate the opportunities for your company in this State, for early action or long range planning. Statewide information is easily obtained by just a letter or call to Ben E. Douglas, Director, Department of Conservation and Development, Raleigh 10, N. C.

Friendly North Carolina Where Industry Prospers

A ready-to-mail brochure with data about power, water, taxes, labor, etc., is yours for the asking.

LETTERS

(Concluded from page 10)

pared with many silicone rubbers), it is not any better and is, in fact, slightly poorer than our Silastic 152 (which we have been selling about four and one-half years). This is substantiated by tests in our laboratories and tests conducted at one aircraft company.

R. S. Naegele
Manager-Silastic Sales
Dow Corning Corp.
Midland, Mich.

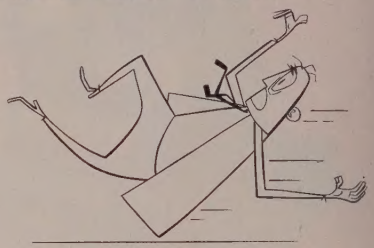
'Saw' Story with Teeth

In the article, "Machining Short Cuts" (July 25, page 105), there is a section titled "Air Control Jumps Saw Production." We are involved in development of processes of fabrication. Where can we get more information on the machine mentioned?

George Bryn
Industrial Engineer
Alsco
Akron

• *Contact Delta Division, Rockwell Mfg. Co., 400 N. Lexington, Pittsburgh, Pa.*

Smooth Surface Problem



In your May 16 Technical Outlook column (page 115), you mention a possible problem with surfaces that are too smooth. We may have such a problem and would like to contact the Westinghouse engineer from whom you received this information.

Bruce C. Johnson
Magna Engineering Corp.
Menlo Park, Calif.

• *This information came from a paper delivered by Joseph Manuele (director of headquarters quality control, Westinghouse Electric Corp., Pittsburgh) before the American Society of Mechanical Engineers. A copy of it (No. 55-S-11) can be obtained for 50 cents from ASME, 29 W. 39th St., New York 18, N. Y.*

Report from Consultant

In your seventh article in the 1955 Program for Management Series, "Business Consultants: Their Uses and Limitations" (Aug. 15, page 123), you briefly mention one of my exasperating experiences: The client who contracts for services, pays well, then files away reports and recommendations and never does a thing about them.

Not once but repeatedly has it happened to me and others called in (sometimes on same and allied problems).

The last few times such firms called, I was just too busy with other work. I now consider my contract is not completed until and unless it is rejected or immediately acted on, not just filed away.

L. Henig
910 13th Ave.
Prospect Park, Pa.

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Platinum and Platinum Group Metals
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Bimetals
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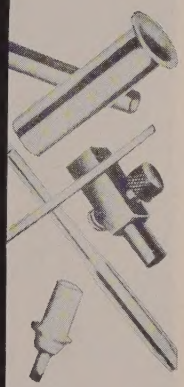
RESEARCH, ENGINEERING AND DEVELOPMENT SERVICES



METALS

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Plants at Malvern, Pa., Fraser, Pa., Vineland, N. J. and Southern Pines, N. C.

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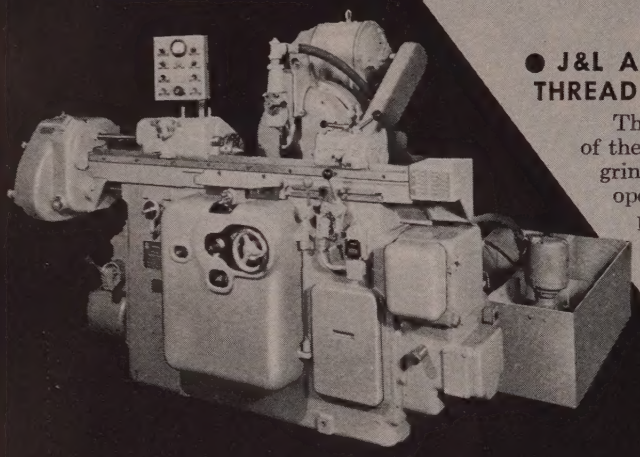
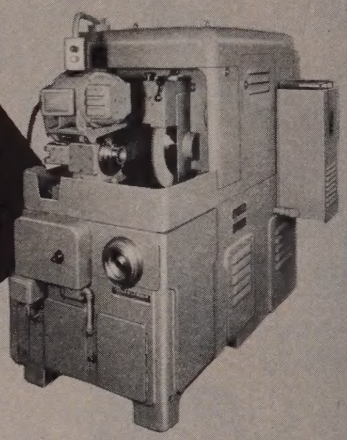
* Trademark International Nickel Company

Looking for higher production



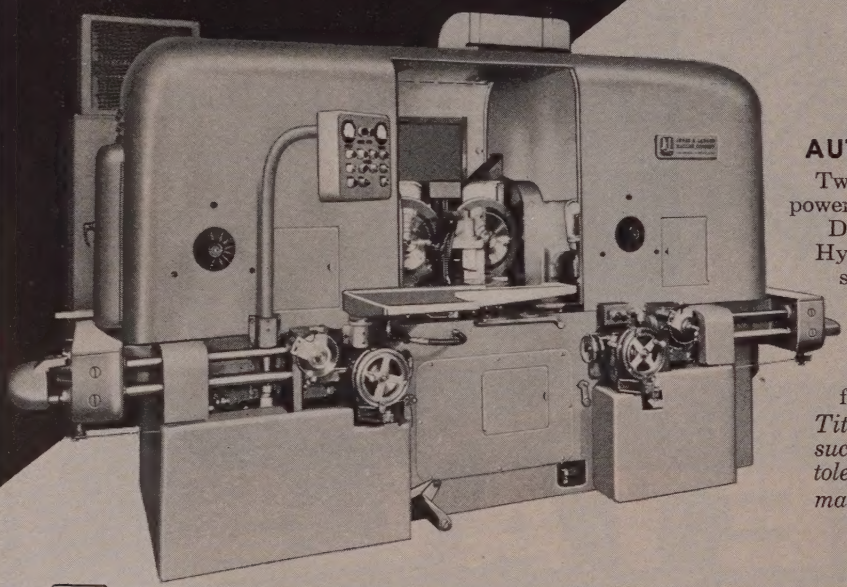
● J&L AUTOMATIC THREAD GRINDER

The self-trueing, self-sizing mechanism of these machines has made thread grinding a practical, profitable production operation. They can be arranged for plunge grinding single or multiple grooves or contours, and for grinding threads with multi-rib wheels, either diamond or crush dressed.



MODEL E AUTOMATIC FORM GRINDER ●

Completely automatic cycle. High speed approach, wheel feed spark-out and withdrawal are positively controlled through simple cam action, ensuring constant, uniform operation under all conditions.



● MODEL D DUO WHEEL AUTOMATIC FORM GRINDER

Two 20″ dia. grinding wheels, powered by 20 HP A.C. motors, or D.C. with rheostat control. Hydraulically operated vertical slide, mounts work holding fixtures. The stroke may be adjusted to accommodate a variety of work. These models are equipped with full vapor control.

Titanium alloys have been successfully ground to tolerances with this machine.

JONES & LAMSON MACHINE COMPANY

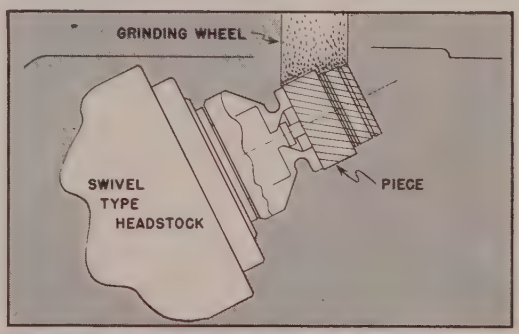
Jones & Lamson offers you a choice of methods for acquiring modern, profit-producing J&L equipment. In addition to outright purchase, J&L makes available several different "Pay-from-Productivity" plans at interest rates of 3¼ % and lower (add-on), and a broad variety of leasing plans.

Send today for complete information. Simply fill in the coupon, *clip it to your letterhead and mail.*

and greater accuracy?

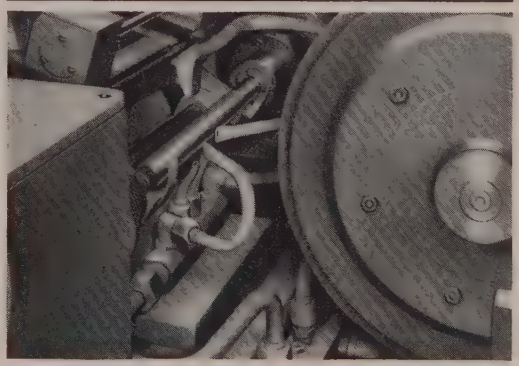
...why not GRIND IT?

Newly developed materials, plus the constant demand for higher production and greater accuracy, are causing industry to step up its search for better methods of producing a great variety of work. In many instances it is found that Automatic Thread and Form Grinders can perform a great many different and difficult production jobs with greater speed and precision than was ever possible with the use of conventional equipment.



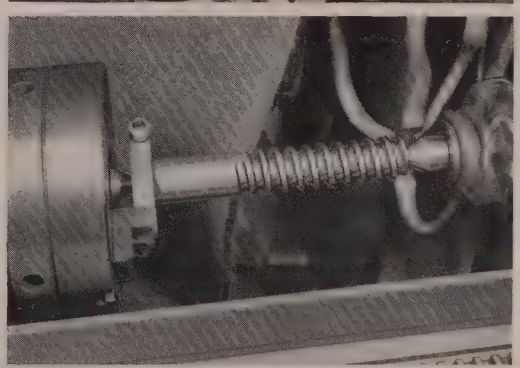
ANGLE GRINDING

This piece is held on an angle by an expanding air-operated arbor in the swivel type headstock of the J&L Model E. Four diam. are ground in one pass with a single wheel.



AUTOMATIC HANDLING

J&L Grinders are readily equipped with automatic handling for maximum output along production lines. This machine has a magazine feed for automatic loading and unloading of parts to be plunge ground for the automotive industry.



STOCK REMOVAL

J&L Wheel Spindles — grease packed for life, allow heavy stock removal such as on this worm (dia. 1.141″, stock removed — .1235″). Plunge ground from the solid — one cut. Increased production 160% over previous method.

P.S. On the basis of increased quality and more production per labor hour, we invite the opportunity to improve upon your existing methods.

MACHINE TOOL DIVISION

UNIVERSAL TURRET LATHES • FAY AUTOMATIC LATHES • AUTOMATIC DOUBLE-END MILLING & CENTERING MACHINES • AUTOMATIC THREAD & FORM GRINDERS • OPTICAL COMPARATORS AUTOMATIC OPENING THREADING DIES & CHASERS

517 Clinton St., Dept. 710, Springfield, Vt., U.S.A.

JONES & LAMSON MACHINE COMPANY
517 Clinton St., Dept. 710, Springfield, Vt., U. S. A.

Please send me the J&L Machine Tool Replacement Information Kit.

Name.....

Title.....

Coming

Sept. 19

IN

STEEL

VALUE ANALYSIS:—

Equal or Better Performance at Lower Cost

A value analyst recommended the use of a forging instead of a weldment in a compressor component. Result: By switching, a New York firm saved $150,000 during the first year. Value analysis, a creative study of every item of cost in the parts or materials a company uses, did this. STEEL will show you how to inaugurate a value analysis program which can bring immediate results.

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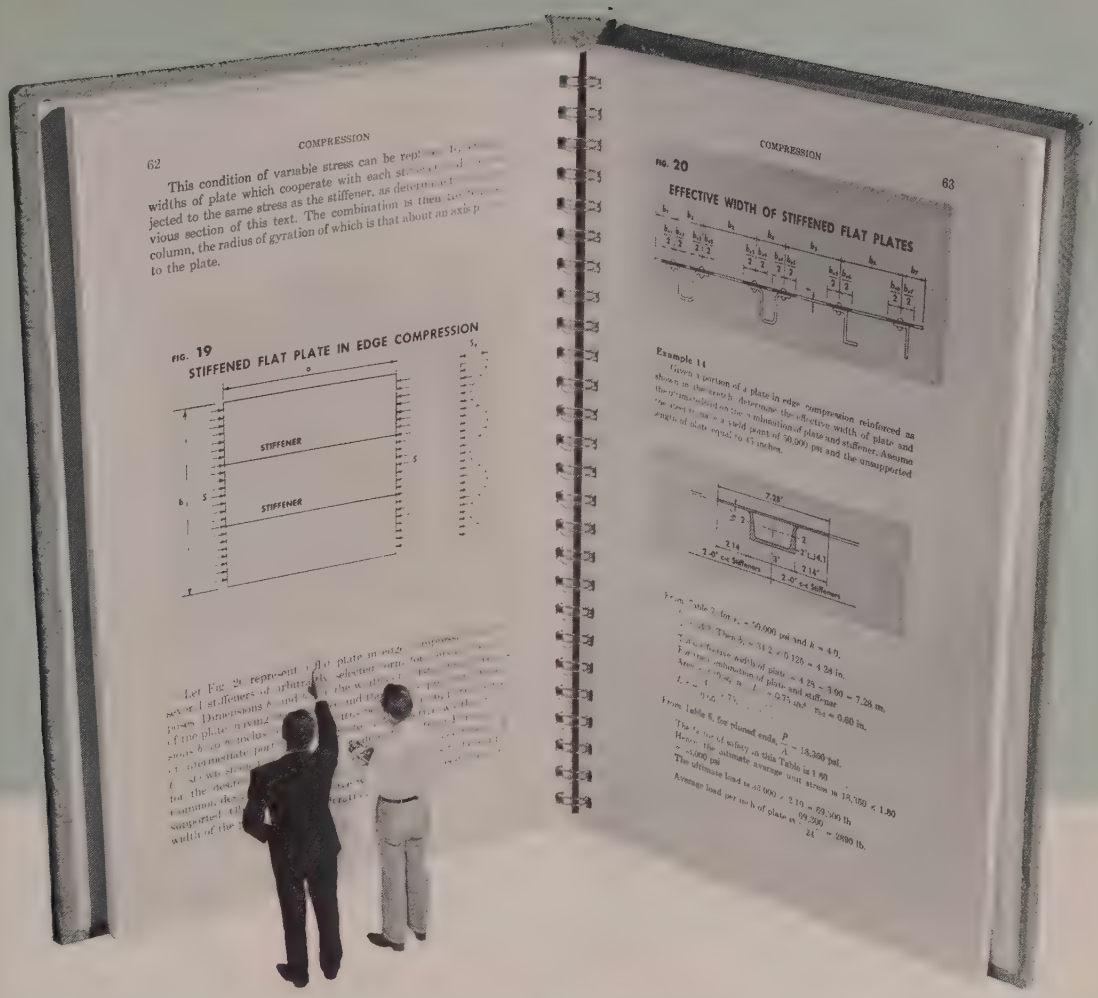
62
COMPRESSION
This condition of variable stress can be rep
widths of plate which cooperate with each st
jected to the same stress as the stiffener, as determ
vious section of this text. The combination is then
column, the radius of gyration of which is that about an axis p
to the plate.
FIG. 19
STIFFENED FLAT PLATE IN EDGE COMPRESSION
STIFFENER
STIFFENER
COMPRESSION
63
FIG. 20
EFFECTIVE WIDTH OF STIFFENED FLAT PLATES
Example 14

You'll find it all here . . .

The information you need when designing for high strength steels

OUR new "Design Manual for High Strength Steels" is ready for distribution. Here are 174 pages of practical, authoritative information that you will find invaluable in designing your product for greater economy and efficiency by the sound use of high strength steels. No designer should be without it.

This excellent book covers in detail the problems of tension, compression, shear, beam stress, deformation and deflection. It fully describes the fundamental characteristics of low-alloy high strength steels, shows you how to design against corrosion, describes the application of formed sections. Complete with tables, formulas, and basic data covering this important field of design.

• • •

For your free copy, write on your company letterhead giving your title or department, to United States Steel Corporation, Room 4840, 525 William Penn Place, Pittsburgh 30, Pa.

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USS HIGH STRENGTH STEELS

USS TRI-TEN • USS COR-TEN • USS MAN-TEN

USS

UNITED STATES STEEL

"We've really learned

——says Bill Ednie

UNITED STATES STEEL

ıow to control quality"

I. S. STEEL INSPECTOR

● You'd want to meet Inspector Bill Ednie if you visited our Homestead District Works Forge Department. He has been an inspector now for 16 years. His father was a U.S. Steel Inspector at Homestead, too—back in the days when you tested forgings with a light bulb and a ball peen hammer.

Now, of course, Bill has the advantage of amazingly accurate test equipment, but he still has to be right on his toes to analyze the complex inspection data. In other words, he is the man who actually "signs out" the forging, and makes sure that it meets every specification.

If you had talked to Bill Ednie when we took these photographs, the conversation might have gone like this:

YOU: *"How much does this forging weigh?"*

EDNIE: "86,000 pounds. It's a steam turbine generator shaft."

YOU: *"Is this the first inspection made on it?"*

EDNIE: "No. This is one of the last. Right after it was forged, we 'barked' it—put it in a lathe and took enough metal off to get a smooth surface. Then I made the first sonic test and found the piece was free of thermal ruptures and internal voids."

YOU: *"How does this sonic tester operate?"*

EDNIE: "Well, it sends a pulse of energy through the forging and it bounces back from the other side. The trick is analyzing the trace on the oscilloscope to be sure the piece is sound all the way through. We use this test for quality control during manufacture."

YOU: *"Do you make other tests?"*

EDNIE: "Always. After we finish the first machining operation, we go in with a trepanning tool and get test bars. Then we send the bars to the lab for tensile and Charpy impact tests and micro tests to check grain structure and cleanliness of the metal."

YOU: *"How about the center of the piece?"*

EDNIE: "We usually bore and ream a hole all the way through, then give the entire inside a boroscope examination. This way, you can actually *see* that the center of the forging is sound."

YOU: *"Does that about wind it up?"*

EDNIE: "For this generator shaft, yes. But inspection often gets more complicated on other forgings. Take a steam turbine rotor. After we bark it, it goes into the heat treating furnace for over 200 hours. Then it's tensile tested, bored, final rough machined and stress relieved. And after that, it gets the heat-indication or stability test."

YOU: *"What's that?"*

EDNIE: "It's a test to show how the rotor will behave in actual use. We put the rotor in a combination lathe-furnace—it's a furnace built on a lathe. The rotor is revolved for about 100 hours at the temperature it will encounter in actual service. If it passes this test, it won't change shape after it's installed."

YOU: *"How do you know what tests to make?"*

EDNIE: "That depends on the end use of the forging. Sales, Technical, Operating and Production men all work with the customer to determine what tests are needed for any one job.

"Sometimes we make scleroscope tests—that's a way to check hardness without marking the piece. Other times we run Magnaflux tests. All in all, we have the most modern testing equipment available."

YOU: *"How do you figure that all this inspection pays off for the customer?"*

EDNIE: "I think the biggest thing is that—because of better inspection—we've been able to develop better production methods. This naturally means fewer rejects, so our customers get better delivery.

"We've really learned how to control quality, and that's what the customer wants. This shop has been going for a long time, and every one of the gang has found that satisfied customers mean more work for all of us."

• • •

When you buy Quality Forgings from United States Steel, men like Bill Ednie work on them. We'll stack their work up against the finest in the land, and we're confident in our ability to furnish the highest quality forgings made. Please send your inquiries to United States Steel, Room 4840, 525 William Penn Place, Pittsburgh 30, Pa.

USS

Quality

FORGINGS

heavy machinery parts—carbon, alloy, stainless

electrical and water wheel shafts

hammer bases and columns

marine forgings

This busy loading dock, with its wooden pilings and flooring, was subjected to severe flood damage due to heaving and buckling. Footing was uncertain when the surface was wet or oily.

Now, this Multigrip-covered dock will last for years with minimum maintenance. Evenly spaced "safe-tread" risers give sure-grip traction plus simplified cleaning and exceptional drainage. Permanent support is given by USS H-Beam Bearing Piles.

Dock flooring replaced **once and for all**

with USS Multigrip Floor Plate

Periodically, the waters of the mighty Mississippi rise . . . causing considerable damage to riverside loading docks. The force of these turbulent flood waters buckles, and often collapses, wooden pilings and flooring. Damage like this means expensive repairs, as well as costly delays in loading operations. Such was the case with a busy dock owned by Mississippi Valley Barge Line Company.

Flood losses and resulting delays were eliminated when Stupp Brothers Bridge and Iron Co. of St. Louis, and Massman Construction Company, Kansas City, Mo., used U.S. Steel Multigrip Floor Plate to renovate this dock, which has already had the sub-structure replaced with steel bearing piling. Now, Multigrip Floor Plate, with flat-topped, "safe-tread" risers, will give many years of sound support plus sure-grip traction for feet and the small diameter wheels on fork trucks and freight dollies.

Indoors or out, USS Multigrip Floor Plate is a wise investment in long-term plant safety. Each "safe-tread" riser with its clean, flat top, acts as an accident stopper in danger areas. Because Multigrip is made of tough steel, it gives extra years of low maintenance service in heavy traffic areas. Multigrip is available in large plates (cutting installation waste) and may be bent or formed for structural use.

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COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
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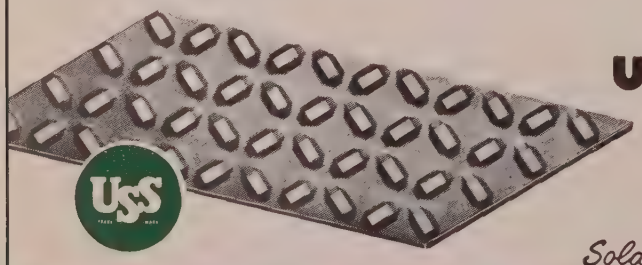


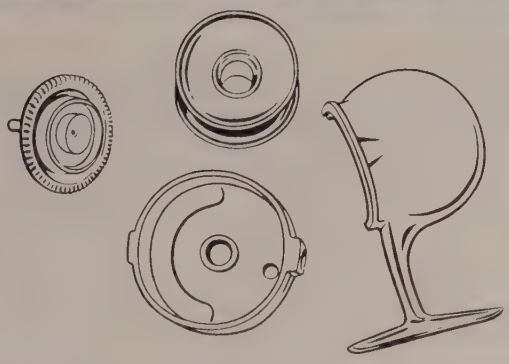
USS multigrip

FLOOR PLATE

Sold by leading distributors from coast to coast

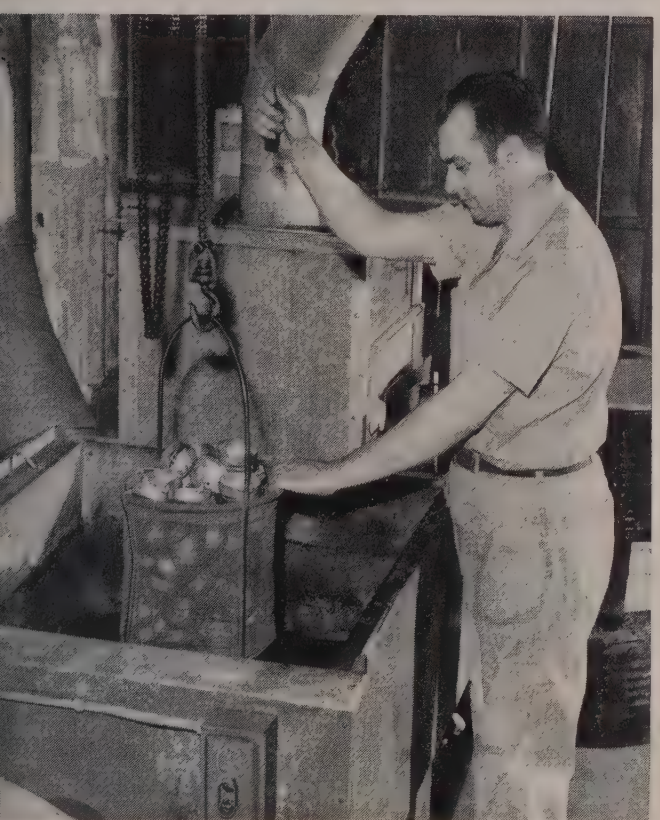
UNITED STATES STEEL

Another field report on "TRICLENE"® D



HIGHLY POLISHED PARTS of the Airex spinning reel are made from five different metals. To clean them all quickly and thoroughly takes just a single degreasing operation with All-Purpose TRICLENE D.

AIREX–fishing reel manufacturer–finds: TRICLENE® D gives brighter cleaning... cuts degreasing time in half



BRIGHT, THOROUGHLY CLEAN aluminum-zinc die castings are removed from the vapor degreaser at Airex Manufacturing Co. TRICLENE D is used by Airex to give fast, efficient, trouble-free degreasing.

Airex Manufacturing Co., of Hillside, N. J., uses parts made of five different metals in its popular spinning reel—aluminum, brass, copper, steel and zinc. Many of the parts are highly polished. Originally, some degreasing operations had to be carried out twice to assure thorough cleaning.

When Airex changed to TRICLENE D trichlorethylene, they substantially cut their degreasing time. *In a single operation*, Du Pont's efficient new solvent gives them the thorough, safe, trouble-free degreasing they need. And TRICLENE D cuts maintenance costs, too: Adjustment of solvent pH is no longer necessary... and the time between degreaser cleanouts is now six to eight weeks instead of two.

Locked-in stabilizers give TRICLENE D unsurpassed resistance to *all* major causes of solvent deterioration—heat, light, air, acids and aluminum chloride—yet this rugged solvent contains nothing to harm even delicately machined metal surfaces. TRICLENE D retains its original high purity longer . . . continues to give *brighter cleaning of any metal*, job after job, distillation after distillation. And remember, it costs no more!

FOR MORE INFORMATION about TRICLENE D and how it can bring a new standard of efficiency to your vapor degreasing operation, write to the nearest District Office of the E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

DU PONT
REG. U. S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

TRICLENE® D

TRICHLORETHYLENE

For increased d-c power . . .

N. W. Geist, Rectifier Department Sales Manager, presents one of the new, sealed Ignitron rectifiers, now available in greatly extended ranges. It is the same type used in this metal-enclosed rectifier unit, rated at 1500 kw, 250 volts, for steel mill service.

NOW! GET WESTINGHOUSE SEALED IGNITRONS IN HIGHER RATINGS, COMPLETELY ENCLOSED UNITS

You can now get d-c power conversion for *any* application with the new, higher rated Westinghouse sealed Ignitron rectifiers. These Ignitrons, through the entire load range, have a clear-cut efficiency advantage over other forms of conversion equipment.

Westinghouse sealed Ignitrons are basically simple . . . there are no major moving parts; all vacuum connections and indicating equipment have been eliminated. Here is a big bonus in less maintenance, lower operating cost. Tubes are permanently sealed at the factory; replacements can be obtained without delay from stock, insuring a minimum of outage time. Ignitron cubicles are completely preassembled and wired—ready for installation upon delivery.

As a Westinghouse unit substation—with associated dry-type or liquid-filled transformers and a-c and d-c switchgear—the new Ignitron rectifiers are more compact, *require less floor space per kw,* than any other conversion equipment. And, with the grounded, dead-front metal enclosure, all personnel hazards are eliminated.

For further data, call your Westinghouse sales engineer, or write to Westinghouse Electric Corporation, Box 868, 3 Gateway Center, Pittsburgh 30, Pa.

J-10443

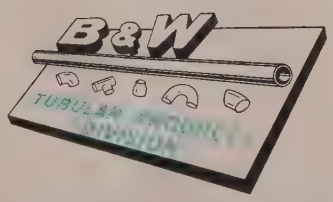
YOU CAN BE SURE... IF IT'S

Westinghouse

Downtime and the labor cost of replacing worn-out tubing made of common materials can be a great deal more expensive than the extra first cost of long-lasting stainless.

The tube failure pictured is a dramatic reminder of the indeterminate, and usually shorter, service life of tubing which may bear a smaller price tag, but whose *total* cost can be measured only after the ravages of time and corrosion have tested its durability.

For optimum strength, corrosion resistance and oxidation resistance, there's a stainless grade, size, heat treatment and finish best suited to your particular pressure and temperature requirements. Ask Mr. Tubes, your link to B&W, how to get more for your money with stainless. *Or write for Bulletin TB-356 S.*



THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
Beaver Falls, Pa. and Milwaukee, Wis.: Seamless Tubing, Welded Stainless Steel Tubing
Alliance, Ohio: Welded Carbon Steel Tubing
Milwaukee, Wis.: Seamless Welding Fittings

TA-5038(P)

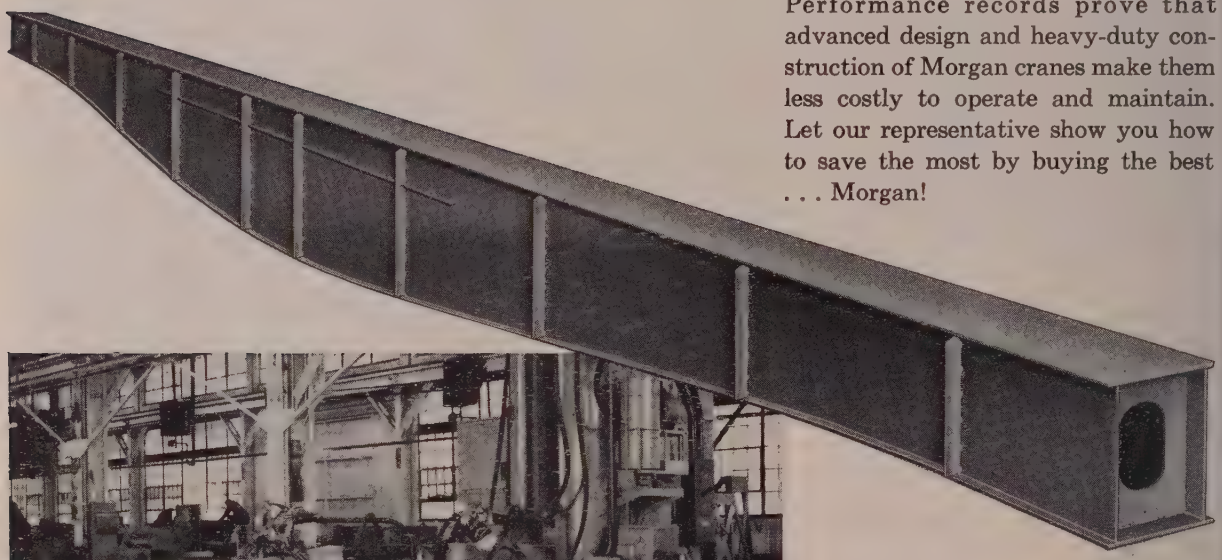
How Morgan cranes get a stiffer backbone ...automatically

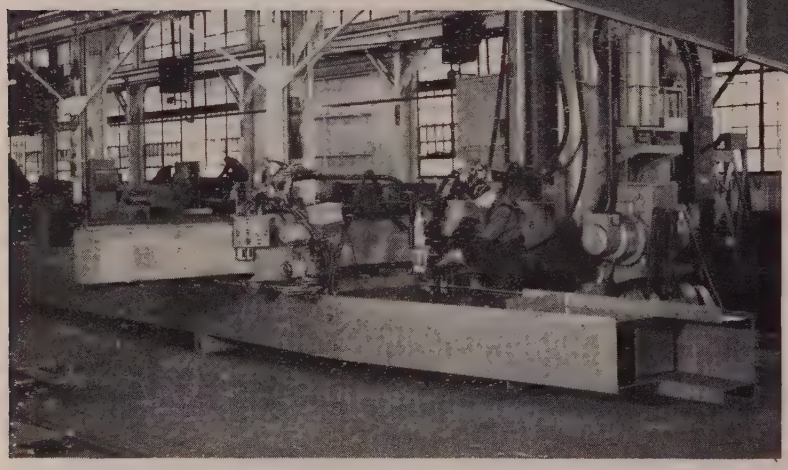
● MORGAN CRANES are stronger, more rigid . . . because girder joints and seams are welded automatically on the world's largest continuous welder. Casting imperfections and hand welding variables are eliminated with Morgan automatic welding. All joints are uniform and sound.

Crane drums, too, are welded automatically, making them stronger and lighter. Casting shrinkage voids are eliminated.

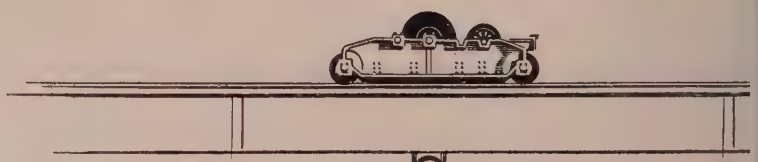
Morgan welders are qualified in accordance with A.S.M.E. and A.W.S. codes.

Performance records prove that advanced design and heavy-duty construction of Morgan cranes make them less costly to operate and maintain. Let our representative show you how to save the most by buying the best . . . Morgan!





Perfect welding penetration is obtained with Morgan's 120" per minute automatic welder. Two welding heads float vertically and horizontally along the track.



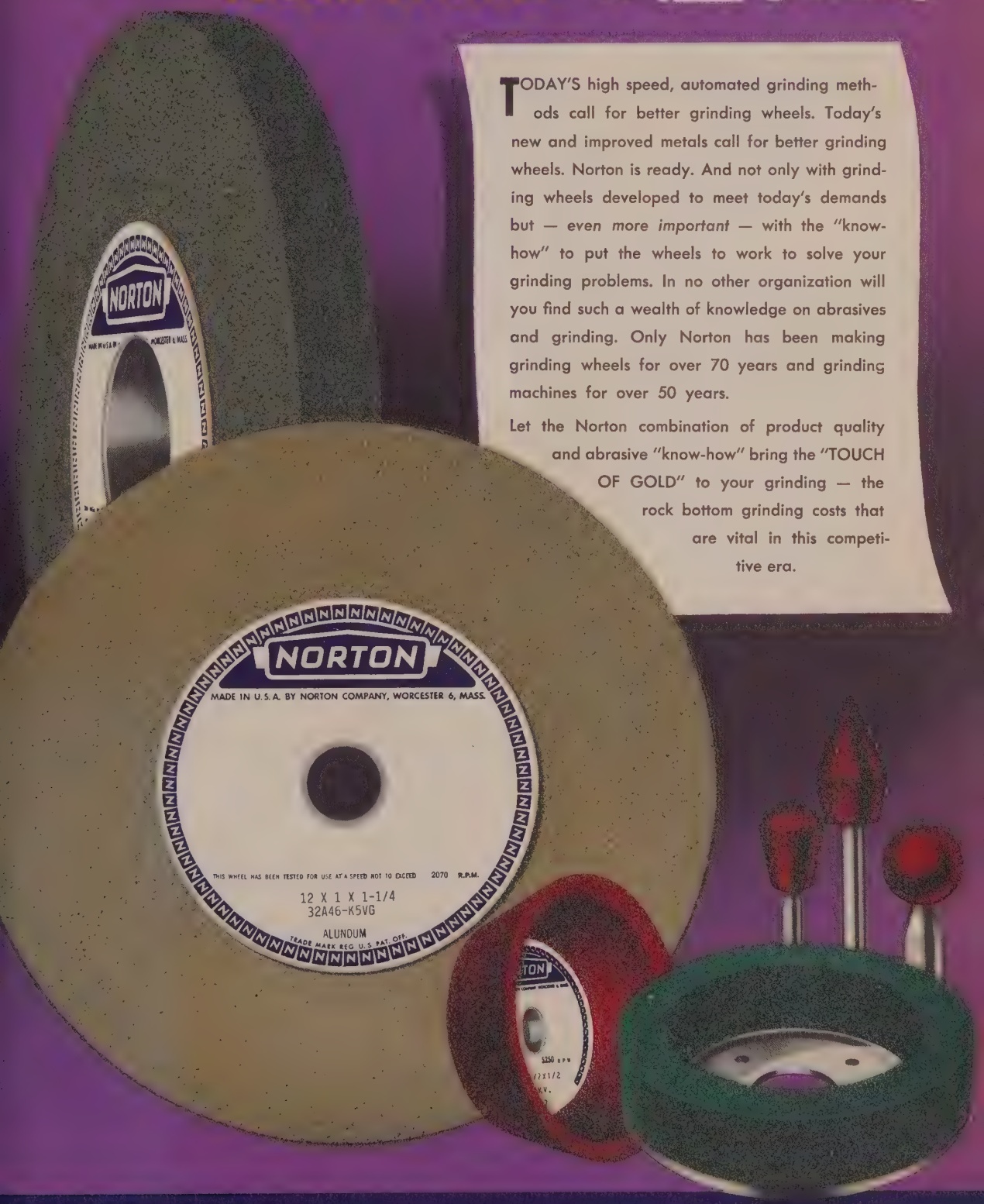
THE MORGAN ENGINEERING CO. *Alliance, Ohio*

The Morgan Engineering Company manufactures overhead electric traveling cranes, gantry cranes, charging machines, plate mills, blooming mills, structural mills, shears and saws.

NORTON KNOW-HOW can bring the "TOUCH OF GOLD" to your grinding

TODAY'S high speed, automated grinding methods call for better grinding wheels. Today's new and improved metals call for better grinding wheels. Norton is ready. And not only with grinding wheels developed to meet today's demands but — *even more important* — with the "know-how" to put the wheels to work to solve your grinding problems. In no other organization will you find such a wealth of knowledge on abrasives and grinding. Only Norton has been making grinding wheels for over 70 years and grinding machines for over 50 years.

Let the Norton combination of product quality and abrasive "know-how" bring the "TOUCH OF GOLD" to your grinding — the rock bottom grinding costs that are vital in this competitive era.


NORTON
MADE IN U.S.A. BY NORTON COMPANY, WORCESTER 6, MASS.
THIS WHEEL HAS BEEN TESTED FOR USE AT A SPEED NOT TO EXCEED 2070 R.P.M.
12 X 1 X 1-1/4
32A46-K5VG
ALUNDUM
TRADE MARK REG U.S. PAT. OFF.

Making better products . . . to make your products better

Norton Service

can help you cut your grinding costs

PRODUCT COMPLETENESS

It means just the right wheel for each of your grinding jobs — wheels developed in the Norton research laboratories especially to meet today's exacting demands — it includes wheels of the exclusive 32 ALUNDUM abrasive and the new record-breaking G and K bonds. For you it means lower cost grinding. And if it's abrasive you use it also means the right type for each job — whether it's polishing, lapping, tumbling or pressure blasting.

ENGINEERING HELP

You can be sure that Norton engineering assistance will give you the full benefit of Norton product variety. Right near you there is a Norton Abrasive Engineer or a Norton factory-trained distributor representative who will see that you get exactly the right wheel for each grinding job — the wheel that will do the job at lowest cost. And to help your men use the wheels to best advantage there is a vast library of Norton know-how books and motion picture films.

DETROIT

PHILADELPHIA

CHICAGO

CLEVELAND

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Sales Offices: New York (Translation), St. Louis, Los Angeles

HANDY STOCKS

When the correct wheels for your jobs have been determined they, too, are handy to you — by the thousands in the five Norton warehouses and on the shelves of Norton distributors in over 225 cities of the United States. And these local stocks are backed by the gigantic stock rooms in the mile-long Norton Worcester plant — the world's largest grinding wheel plant. Serving foreign countries are seven Norton branch grinding wheel plants and distributors in all principal cities.

NORTON
ABRASIVES

NORTON COMPANY, WORCESTER 6, MASS

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DISSTON
HAS THE EDGE®

in files

If you want top-quality, long-lasting files—choose Disston. They cut fast, smooth, easy. You'll do better filing with a Disston whether American or Swiss pattern types.

DISSTON BITE-RITE® AMERICAN PATTERN FILES. Sharp teeth cut level and smooth at each stroke, eliminate tracking. This means better finishing, faster work. Exclusive Bite-Rite design forms curls instead of chips, thus assuring clean, open gullets for continued better filing.

DISSTON SUPERFINE® SWISS PATTERN FILES. Acclaimed for their accuracy by tool and die makers and machinists who recognize quality tools. Available in a complete assortment of sizes and cuts for filing intricate shapes . . . also for bench filing requiring bench and parallel machine files.

Write today for complete Disston file information and file selection wall charts for your shop.

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926 Tacony, Philadelphia 35, Pa.

Other factories and branches: Toronto, Ont.; Seattle, Wash.; Chicago, Ill.

OTHER FINE DISSTON METAL CUTTING TOOLS

DISSTON METAL CUTTING BAND SAWS. Hard-edge, flexible-back band saws cut smoothly through metal, plastics and wood. Tooth edge only is hardened, and specially heat-treated to insure long service without resharpening. For your safety and convenience 100′ coils ⅛″ to ½″ wide are supplied on Disston safety reels. The special reel prevents stock from springing out. Unused stock can be rewound—no loose ends can cause accidents.

Call your Disston Distributor and let him show you other reasons why DISSTON HAS THE EDGE. He is equipped to give you expert advice and prompt service.

NATCO ENGINEERS

OVERCOME DISTORTION

DURING MACHINING

WITH

STRESSPROOF®

SEVERELY COLD-WORKED, FURNACE-TREATED STEEL BARS

The Lead Screw Tapper Spindles of this Natco Three-way Holetapper required machining operations hard to combine without serious distortion.

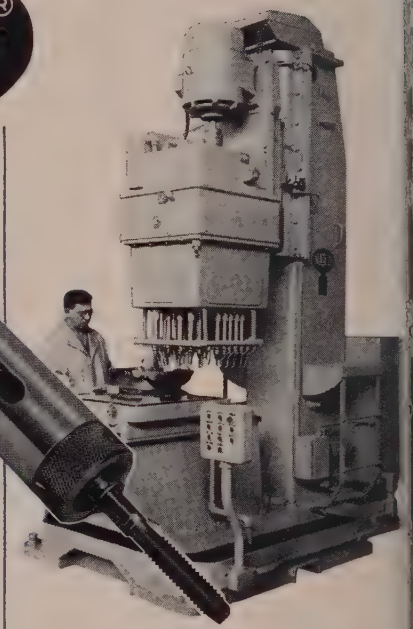
The front end of each spindle had to be machined as a taper socket for collet application. When the driving keyway and the tool knockout elongated-splined-holes were machined, distortion caused out-of-round taper holes which would not receive the collet correctly.

The rear end of each spindle had to be machined as a driving spline shaft which slides under load. Since the diameter of the spline is relatively small in proportion to the shaft length, any attempt to heat treat caused distortion hard to correct by straightening.

And at the center of each spindle, an accurate lead screw had to be machined by a thread grinding operation. It was found that the finish was much more easily obtained when STRESSPROOF was used.

STRESSPROOF eliminated both the problem of the out-of-round taper holes on the front of each spindle . . and the distortion of the driving-spline-shaft.

STRESSPROOF makes a better part at a lower cost.



National Automatic Tool Co. has for many years used STRESSPROOF in the manufacture of important operating parts for this Three-way Holetapper, as well as for other Natco high-speed machine tools.

WRITE TODAY FOR
Helpful Data Bulletin No. 15 "Improve Quality —Cut Costs"

AVAILABLE FROM LEADING STEEL DISTRIBUTORS COAST-TO-COAST

La Salle STEEL CO.

1414 150th Street, Hammond, Indiana

MANUFACTURERS OF AMERICA'S MOST COMPLETE LINE OF QUALITY COLD-FINISHED STEEL BARS

CALENDAR
OF MEETINGS

Oct. 5-6, American Machine Tool Distributors Association: Annual meeting and show, Blackstone hotel, Chicago. Association's address: 1900 Arch St., Philadelphia 6, Pa. Secretary: Thomas A. Fernley Jr.

Oct. 6-8, Industrial Truck Association: Fall meeting, the Greenbrier, White Sulphur Springs, W. Va. Association's address: 526 Washington Loan & Trust Bldg., Washington 4, D. C. Managing director: William Van C. Brandt.

Oct. 6-8, Material Handling Institute Inc.: Fall meeting, the Greenbrier, White Sulphur Springs, W. Va. Institute's address: One Gateway Center, Pittsburgh 22, Pa. Managing director: R. Kennedy Hanson.

Oct. 6-17, Metalworking Machinery & Equipment Exposition: Coliseum, Chicago. Information: Exhibition & Convention Management Inc., 2689 E. Overlook Rd., Cleveland 6, O. General Manager: C. L. Wells.

Oct. 6-17, National Machine Tool Show: International Amphitheatre, Chicago. Sponsor: National Machine Tool Builders Association, 2071 E. 102nd St., Cleveland 6, O. General Manager: Tell Berna.

Oct. 6-17, Production Engineering Show: Navy Pier, Chicago. Sponsor: National Machine Tool Builders' Association, 2071 E. 102nd St., Cleveland 6, O. General Manager: Tell Berna.

Oct. 9-11, Metal Powder Association: Fall closed meeting, the Homestead, Hot Springs, Va. Association's address: 420 Lexington Ave., New York 17, N. Y. Secretary: Robert L. Ziegfeld.

Oct. 11-14, National Metal Trades Association: Eastern plant management conference, Essex and Sussex hotels, Spring Lake, N. J. Association's address: 122 S. Michigan Ave., Chicago 3, Ill. Secretary: C. L. Blatchford.

Oct. 11-16, American Chemical Society: Fall meeting, University of Minnesota, Minneapolis. Society's address: 1155 16th St., N.W., Washington 6, D. C. Executive secretary: Alden H. Emery.

Oct. 12-14, American Road Builders Association: Annual conference of county engineers and officials, New Riverside hotel, Gatlinburg, Tenn. Association's address: World Center Bldg., Washington 6, D. C. Secretary: Eugene Reybold.

Oct. 12-14, Allied Railway Supply Association: Annual meeting and exhibit, Sherman hotel, Chicago. Association's address: P.O. Box 5522, Chicago, Ill. Secretary: Charles F. Weil.

Oct. 12-15, Automotive Electric Association: Fall meeting, the Homestead, Hot Springs, Va. Association's address: 16223 Meyers Ave., Detroit 35, Mich. Secretary: S. W. Potter.

Oct. 12-15, Society of Automotive Engineers Inc.: Tractor meeting and production forum. Hotel Schroeder, Milwaukee. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: John A. C. Warner.

Oct. 12-16, Instrument Society of America: Annual conference and exhibit, Shrine Auditorium and Exposition Hall, Los Angeles. Society's address: 1319 Allegheny Ave., Pittsburgh 33, Pa. Executive director: William H. Kushnick.

Oct. 14, Steel Kitchen Cabinet Manufacturers Association: Fall meeting, Hotel Cleveland, Cleveland. Association's address: 1008 Engineers Bldg., Cleveland, O. Secretary: Arthur J. Tuscany Jr.

Oct. 14-15, American Die Casting Institute: Annual meeting, Edgewater Beach hotel, Chicago. Institute's address: 366 Madison Ave., New York 17, N. Y. Secretary: David Laine.

Oct. 14-16, Porcelain Enamel Institute: Shop practice forum, Deshler-Hilton hotel and Ohio State University, Columbus, O. Institute's address: 1145 19th St. N.W., Washington 6, D. C. Secretary: John C. Oliver.

Oct. 15-18, Packaging Machinery Manufacturers Institute: Annual meeting, the Homestead, Hot Springs, Va. Institute's address: 342 Madison Ave., New York 17, N. Y. Secretary: Helen L. Stratton.

"Problem"

PRECISION PARTS

that meet your specs

. . . and your timetable

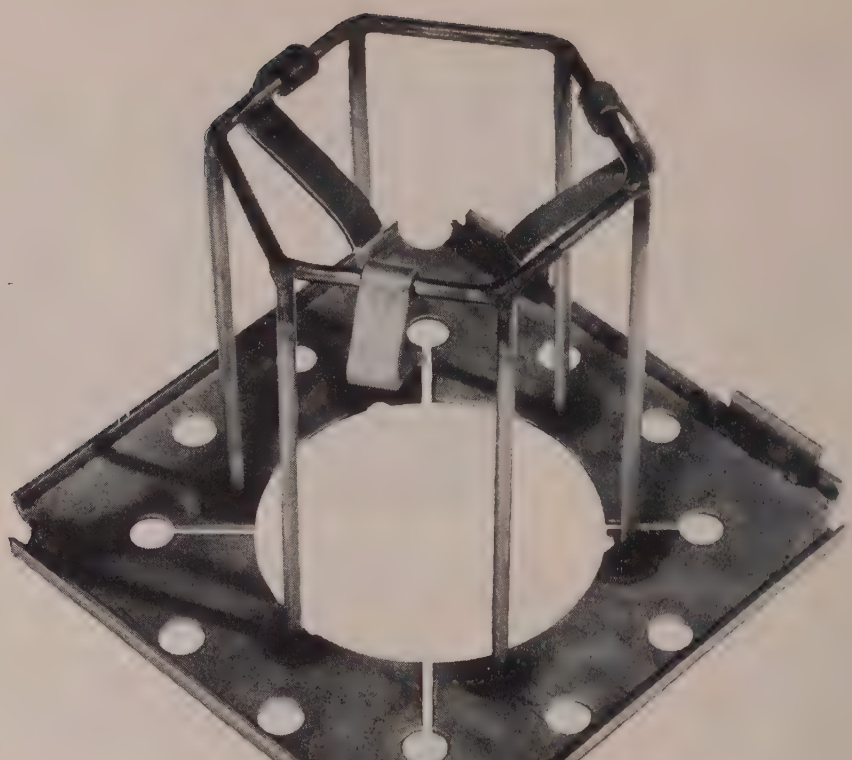
The smaller part shown is a lever shaft for automatic voting machines. Made of square stock it is 3/16″ x 7″ long, it must be absolutely straight and free of all burrs and cut-off points. Spacing between the grooves is held to .005″ and groove widths and diameters to .003″

The larger part is a 1″ diameter by 9¾″ long washing machine shaft. It is induction-hardened on the unthreaded end to approx. 50 Rockwell "C". Threads must be concentric to the O.D. of the shaft within .004″ total indicator reading, and the tolerance on the finished ground diameter is only .0005″!

These parts are typical of the ultra-precision special parts turned out by the millions at Western. Your jobs may not be as fussy as these, but large or small (from wire size to 4¾″ round), plain or fancy, you can save yourself money, time and trouble by getting quotations on your *toughest* jobs from Western — today.

Western Automatic
Machine Screw Company
377 Woodland Ave., Elyria, O.

Precision Screw Products, Parts and Assemblies Since 1873



Still in Use after 1½ Years

of Heating and Quenching

This tray, made of a HAYNES high-temperature alloy, has been subjected to continual heating and cooling for 18 months . . . and it is still in good shape.

In the heat-treating operation, trays and rings are heated to 1550 deg. F for a half hour and then given a rapid oil quench. This repeated exposure to high temperatures and thermal shock caused other trays to twist out of shape in a few days.

The HAYNES alloy used to solve this problem was HASTELLOY alloy C. There are 10 other HAYNES high-temperature alloys—each designed to resist certain severe operating conditions. All of the alloys have remarkable strength at high temperatures, coupled with excellent oxidation resistance and dimensional stability. One of them may be the answer to a production or maintenance problem in your plant.

For information on prices, available forms, and properties of these alloys, write to our general sales office in Kokomo, Indiana or to any of the District Sales Offices listed below.

HAYNES TRADE-MARK ALLOYS

HAYNES STELLITE COMPANY

A Division of Union Carbide and Carbon Corporation

UCC

General Offices and Works, Kokomo, Indiana

Sales Offices

Chicago • Cleveland • Detroit • Houston • Los Angeles • New York • San Francisco • Tulsa

"Haynes" and "Hastelloy" are registered trade-marks of Union Carbide and Carbon Corporation

All belt and two yards wide

(Guard lifted and coolant flow stopped to reveal belt action.)

PHOTOGRAPHED AT BELL AIRCRAFT CORPORATION.

86 inches wide, in fact—by 138 inches long... *all* belt! Here's why: to generate taper of the required precision on huge aluminum aircraft "skins," conventional milling methods were far too slow and costly. So CARBORUNDUM abrasive engineers, in collaboration with the Air Force, Bell Aircraft Corporation, and the Hill-Acme machine people, designed and produced this special belt, in proper gradings to meet the rigid specifications of surface finish and dimensional accuracy.

● If *you* are stymied by an unusual grinding problem, turn to the source with the greatest experience and application "know-how" in the abrasive field today! Call in your CARBORUNDUM Distributor or salesman, or write The Carborundum Company, Niagara Falls, New York. In Canada: Canadian Carborundum Company, Ltd., Niagara Falls, Ont.

Through application "know-how" and product quality

CARBORUNDUM

REGISTERED TRADE MARK

continually puts more sense in your abrasive dollar

The "see-through" safety guard was specially made for this photo only.

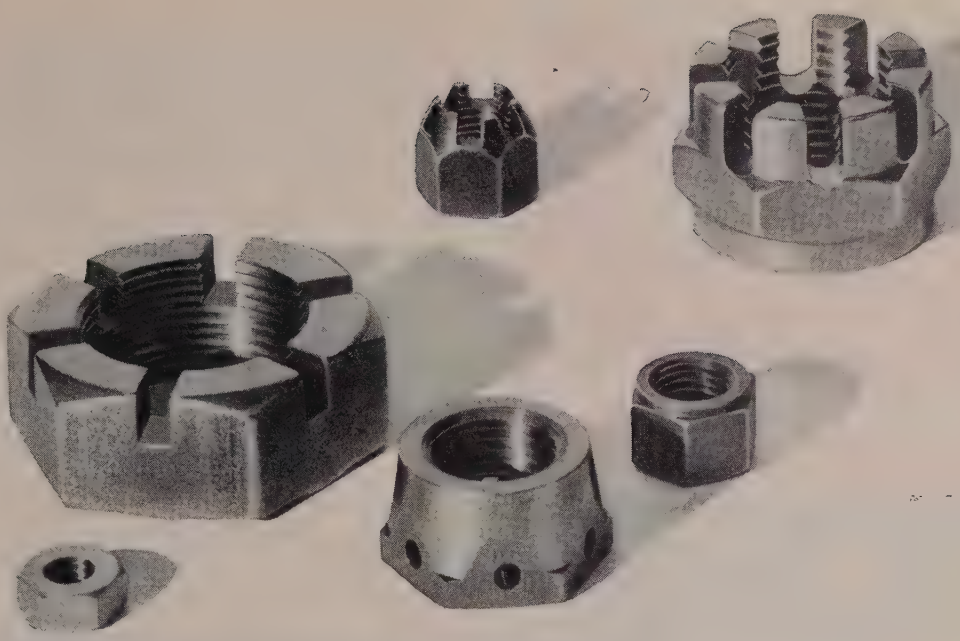
Distinctive RED blotter on a new WHITE wheel is the sign of COOL tool grinding worth cheering about! And that's not all...V40 Bond Tool Room Wheels by CARBORUNDUM cut faster, last longer and permit heavier infeeds without burning the stock or overheating the tool, even on die steels and hi-vanadium types. And the outstanding form-holding ability of V40 Bond Wheels eliminates costly stops for wheel dressing halfway through a job. Try one in your shop today. There's a type for every tool room operation...easily identified by the V40 on the bright red blotter. Your CARBORUNDUM Distributor or salesman will arrange a free demonstration. For Bulletin A-1310, write The Carborundum Company, Niagara Falls, New York. In Canada: Canadian Carborundum Company, Ltd., Niagara Falls, Ontario.

Through product quality and application "know-how"

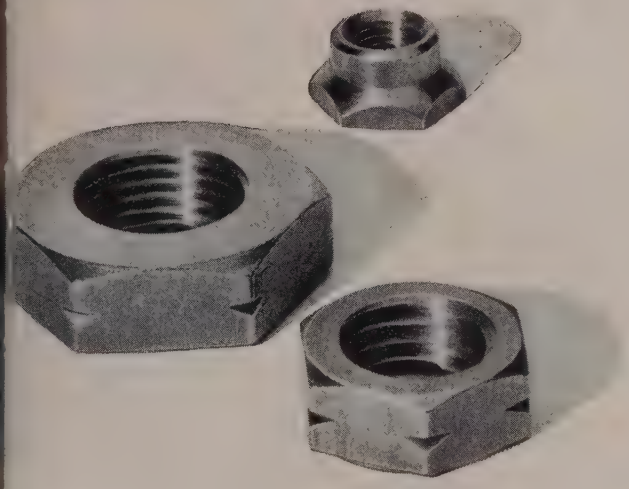
CARBORUNDUM

REGISTERED TRADE MARK

continually puts more sense in your abrasive dollar



Economical way to make nuts . . . out of Youngstown Cold Finished Bars



●Take a look at these nuts. Some of them are pretty complicated. Wood & Spencer of Cleveland, Ohio, uses Youngstown Cold Finished Bars to produce them to specifications at the right price.

When the finish requirements are fussy, these cold finished bars eliminate most grinding operations. They're free of seams. And the chips are small and break off easily. Not the stringy kind that get caught in the cut-off blade on an automatic.

When you order Youngstown Cold Finished hexes, you can be sure they'll be held to the right tolerances. And cracked steel rarely turns up. If you use automatics, it will pay you to use Youngstown Cold Finished Bars. Get in touch with your nearest Youngstown District Sales Office.

QUALITY YOUNGSTOWN SERVICE

Youngstown COLD FINISHED BARS

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices Youngstown, Ohio District Sales Offices in Principal Cities.

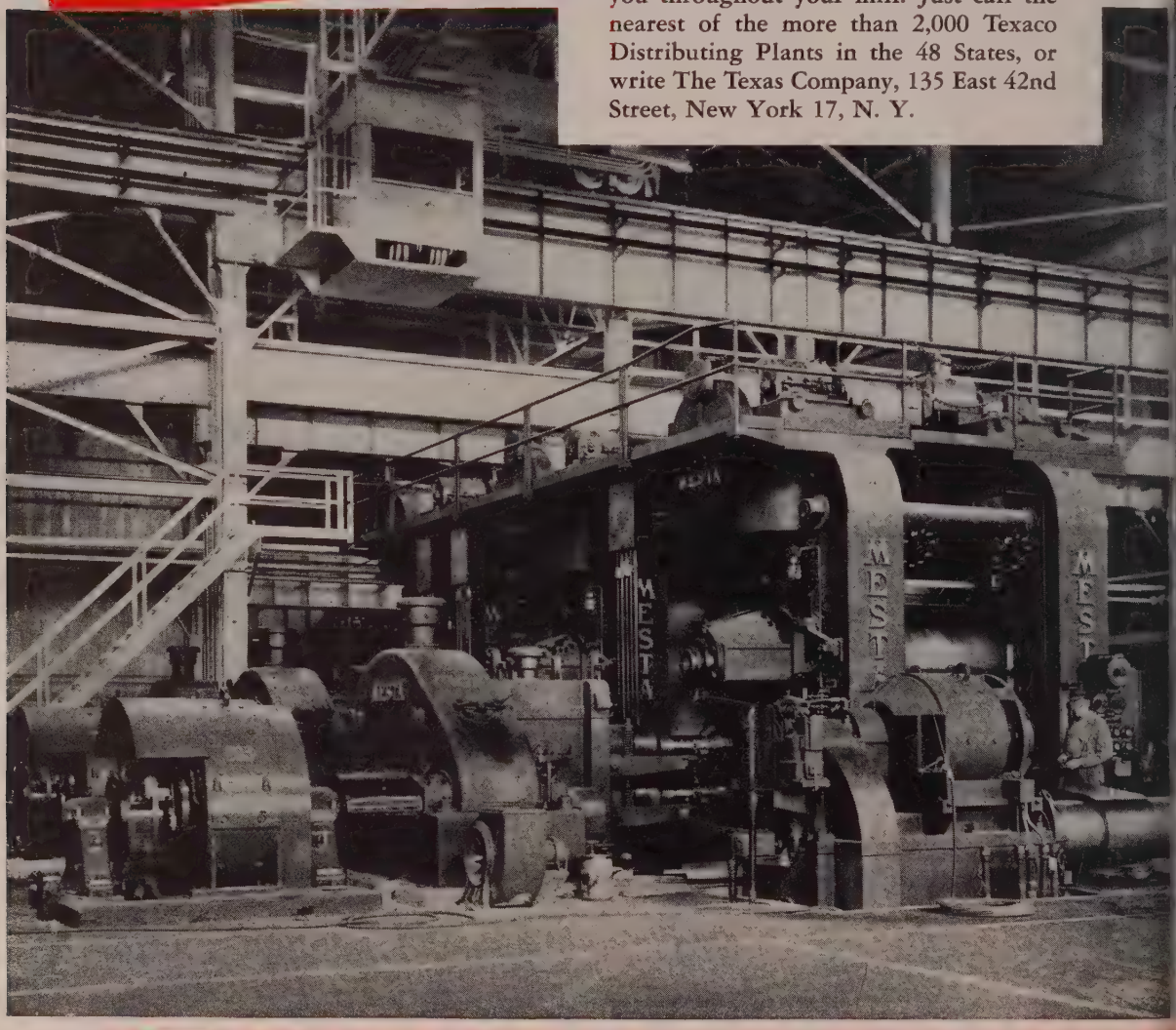
SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - BLACK PLATE - RAILROAD TRACK SPIKES - MINE ROOF BOLTS

A BETTER LUBE FOR BETTER PROTECTION

ENCLOSED gears and their bearings get better protection with *Texaco Meropa Lubricant*—a fact proved in the toughest service in mills everywhere.

Texaco Meropa Lubricant is made from top quality oils blended with extremely effective EP agents and lead soap. The result is a lubricant that stands up under heat and pressure, has exceptional adhesive properties for long-lasting protection. *Texaco Meropa Lubricant* resists oxidation, does not separate in use or storage, does not foam, and is non-corrosive to gears and bearings.

Let a Texaco Lubrication Engineer help you throughout your mill. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



TEXACO

TEXACO Meropa Lubricants

FOR STEEL MILL GEAR DRIVES

TUNE IN . . . TEXACO STAR THEATER starring JIMMY DURANTE on television . . . Saturday nights, NBC

Fair Trade Pricing Dims

Westinghouse Electric Corp. is abandoning fair trade pricing on electric housewares, fans, vacuum cleaners and automatic bed coverings. John J. Anderson, manager, portable appliances, states: "We believe in fair trade, but under present conditions do not believe it is workable." Crux: Westinghouse is confident that the profit system, combined with fair competition, will bring it added business in an expanding housewares market and thinks the manufacturer who can build a better product at a lower price will get the lion's share.

DOD May Need More Nickel

Military requirements for nickel are expected to rise sharply. The reason: Alleged failure of the Defense department to include in its specifications the amount of nickel contained in components going into military end items. If investigation substantiates this report, nickel requirements for the stockpile would skyrocket, too.

Miner Turns Underwear Maker

The second-ranking producer of anthracite, Philadelphia & Reading Corp. changed its name (it was the Philadelphia & Reading Coal & Iron Corp.) on Sept. 1, and then announced an expansion program—it is entering the underwear business. Purchase of the Union Under Wear Co. is the first move on its part to branch into fields which do not pertain to mining.

Trend in the Making?

N. A. Palmer, an employee of the Wolverine Tube division of Calumet & Hecla Inc., brought suit against the international union of the United Automobile Workers, CIO. Charges: In 1951 he was prevented from working during a strike by threats and violence by a picket line at the plant entrance. This, said Palmer, made the union responsible for mental anguish and loss of wages. A jury in Morgan County Circuit (Alabama) agreed. Result: The UAW was ordered to pay Palmer $18,450.

Aussies Will Get Jeep

Willys is setting its sights on Australia. J. C. Delaplaine, general manager of the Willys-Overland Export Corp., says the company will invest some $8 million to bring jeep, jeep truck and station wagon production facilities to the "land down under." A team of experts will be sent to make final plans within the next six weeks. Production may get under way by early '56.

Appliances: Utopian Sales in '55

Nine years were required to produce ten million appliance motors at General Electric Co.'s De Kalb plant. Carl K. Moeller, general manager of

GE's appliance motor department, predicts: "The department will equal this ten-million total again within the next four years. Another estimate: The home laundry and electric sink industry (dishwashers, dryers, food waste disposers and washing machines) will increase its sales some 70 per cent in the next five years. Looking at this year, Mr. Moeller states: "I expect 1955 major appliance sales to top the boom year, 1953, by 20 per cent."

Army Contracts for Flood Area

Army procurement officers have been instructed by Army Secretary Wilbur Brucker to review their proposed buying schedules to determine what work normally would be placed with companies in the flood-stricken Northeastern states. The Army chief has authorized procurement personnel to negotiate these orders directly with suppliers in these areas. Negotiating contracts rather than awarding them to the lowest competitive bidder means that firms in the disaster locality will be assured of orders even though companies outside the flood area might be able to do the job at lower cost. Firms "outside" will not receive an opportunity to bid.

Gear, Turbine Programs Approved

After several months of delay, the Office of Defense Mobilization will use its borrowing authority to purchase machine tools and other equipment (totaling $65 million) to make turbines and gears. These purchases will increase capacity to about 45 per cent of what the U.S. needs in case of complete mobilization. If plans under discussion are approved, the Navy and Maritime administration will buy and stockpile long-lead-time components, particularly reduction gear sets.

Manmade Sparklers Coming

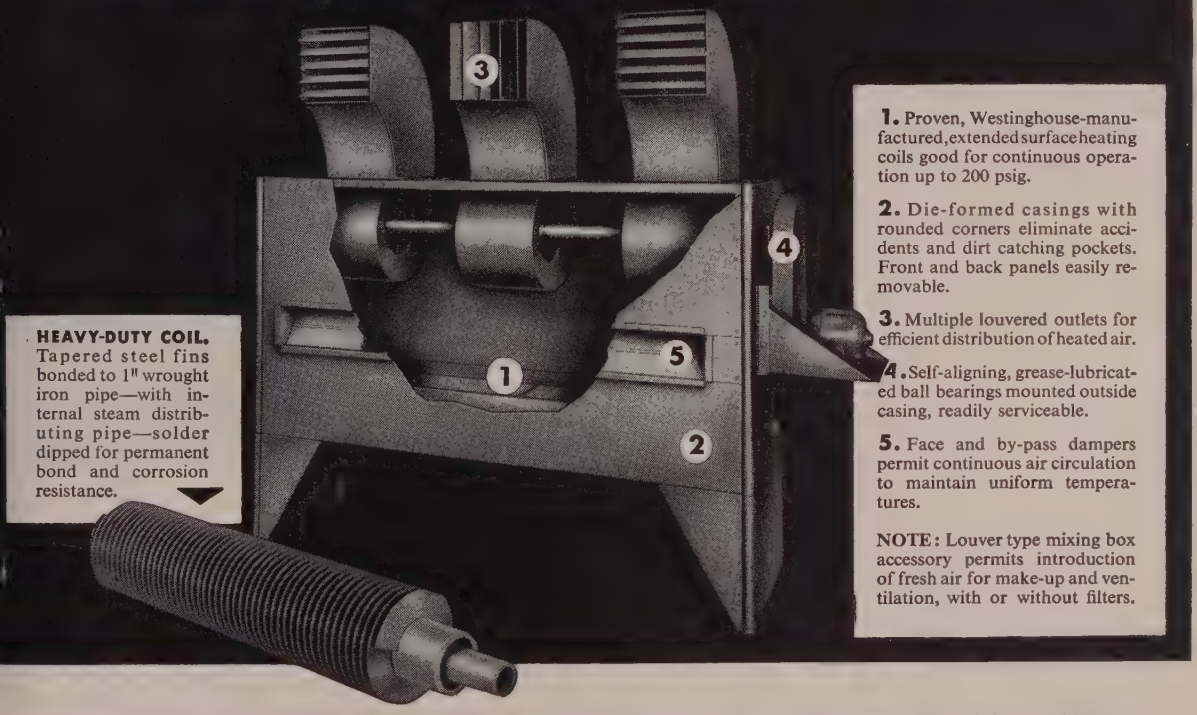
Manmade diamonds have taken another step toward reality. The Carboloy department of GE has been assigned the responsibility for the commercial development of the manufacturing process. According to J. R. Beardsley, general manager, Carboloy, his department will bridge the gap between the laboratory and the production line in the next few years. Commercialization of manmade diamonds would give the U.S. an independent domestic source of this strategic material.

Straws in the Wind

The F100C fighter plane is in production at North American Aviation Co. The first plane is in preflight status and will be flown in about two weeks . . . Borrowing an idea from American business, the United Steelworkers of America, Local 1331, Youngstown, is now offering two $500 college scholarships . . . AFL President George Meany has called for a Congressional investigation of reports that agents of southern communities have invaded Northeastern states with plans to lure mill owners to abandon their flood-damaged plants and relocate in the South.

Fact:

Rugged Westinghouse Industrial Heaters available in 24 Sizes . . . 8 Coil Selections . . . 150 Ratings from 100,000 to 2,500,000 BTU/hr . . . 2,000 to 25,000 CFM each



HEAVY-DUTY COIL. Tapered steel fins bonded to 1" wrought iron pipe—with internal steam distributing pipe—solder dipped for permanent bond and corrosion resistance.

1. Proven, Westinghouse-manufactured, extended surface heating coils good for continuous operation up to 200 psig.

2. Die-formed casings with rounded corners eliminate accidents and dirt catching pockets. Front and back panels easily removable.

3. Multiple louvered outlets for efficient distribution of heated air.

4. Self-aligning, grease-lubricated ball bearings mounted outside casing, readily serviceable.

5. Face and by-pass dampers permit continuous air circulation to maintain uniform temperatures.

NOTE: Louver type mixing box accessory permits introduction of fresh air for make-up and ventilation, with or without filters.

Solve your space heating problems with Westinghouse-Sturtevant Industrial Heaters. Eliminate cold, drafty conditions caused by excessive cold infiltration through leakage or exhaust.

Two Types With Wide Applications:

GENERAL PURPOSE HEATER . . . For manufacturing areas, warehouses, garages, commercial buildings—with standard non-ferrous heating coils.

HEAVY-DUTY HEATER . . . For continuous-duty high-pressure systems, or industrial process work —with wrought iron heating coils.

The compact packaged engineering of every Westinghouse-Sturtevant Industrial Heater provides units for mounting on floor, walls, or suspended from ceilings. In short, they can be placed where they will do the most good, and can be relocated to meet any change in plant layout.

Every unit is backed with a Westinghouse exclusive—*one warranty*. Only Westinghouse makes all principal components—Fans, Heating Coils, and Motors. You can get unit engineering and single equipment responsibility.

MORE FACTS? To find out how to solve your particular heating problem, call your Westinghouse-Sturtevant Sales Engineer . . . he is the "Man With The Facts" on heating, air handling, and electronic air cleaning . . . or fill in coupon below.

WESTINGHOUSE AIR HANDLING

YOU CAN BE SURE...IF IT'S

Westinghouse

D427

Westinghouse Electric Corp.
Sturtevant Division, Dept. 14H
Hyde Park, Boston 36, Mass.

Please send more information on your Industrial Heaters.

NAME AND TITLE .....

COMPANY .....

CITY ..... STATE .....

15 years of testing in atmosphere show

New ARMCO ALUMINIZED STEEL outlasts Commercial Galvanized 3 to 1

Combines corrosion-resisting properties of aluminum with strength of steel

A new Armco aluminum-coated steel that resists atmospheric corrosion at least three times as long as the coating on commercial galvanized steel sheets is now available for use in your products. Called Armco ALUMINIZED STEEL® (Type 2), it has all the surface advantages of aluminum plus the strength of steel.

Besides strength and corrosion resistance, this new steel gives your products these benefits:

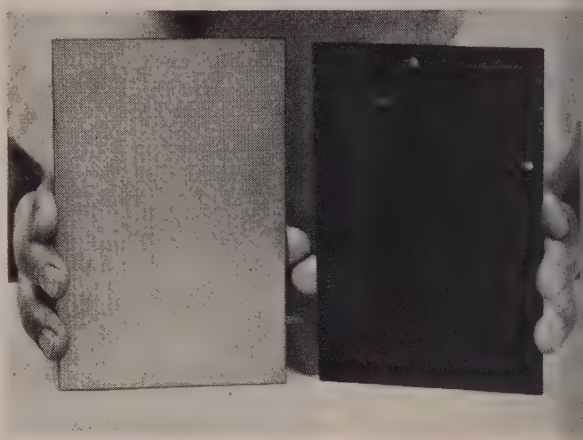
1. It reflects 80% of the radiant heat thrown against it.

2. It resists fire damage. At 800 F, for example, it has more than ten times the strength of aluminum.

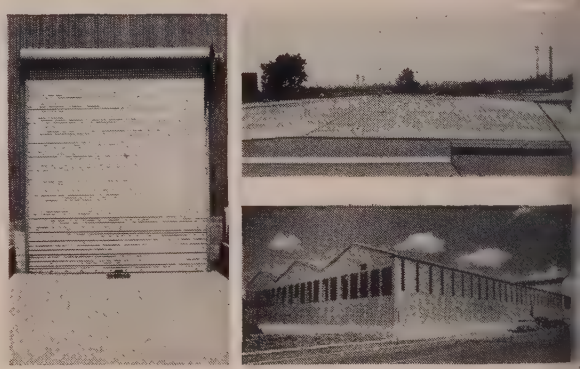
3. It withstands forming. ALUMINIZED (Type 2) also can be embossed and spun.

4. It generally costs less per square foot than aluminum, even when thickness is equal. And because ALUMINIZED STEEL permits lighter gages for comparable strength, it may save you as much as 40% to 50%.

This exciting new steel can give your "outdoor" products big sales advantages. Get the full story on sizes, gages and prices. Mail the coupon today.



In atmosphere corrosive enough to cause a standard galvanized coating (right) to fail completely in 12 years, Armco ALUMINIZED STEEL (Type 2) looked like this (left) after 15 years. Cleaned samples show the aluminum coating is still giving full protection to the base metal.



Resistance to atmospheric corrosion makes ALUMINIZED (Type 2) an ideal metal for rolling doors, roof deck, buildings and similar applications.

ARMCO STEEL CORPORATION, 405-C Curtis St., Middletown, Ohio

Send me complete details on Armco ALUMINIZED STEEL (Type 2).

We manufacture _____

Name _____

Firm _____

Street _____

City _____ *Zone* _____ *State* _____

ARMCO STEEL CORPORATION MIDDLETOWN, OHIO

SPECIAL STEELS

SHEFFIELD STEEL DIVISION · ARMCO DRAINAGE & METAL PRODUCTS, INC. · THE ARMCO INTERNATIONAL CORPORATION

An Amazing Industry

Six years ago this magazine published a comprehensive report on the outlook for steelmaking capacity in the United States based on the judgment of outstanding authorities of that day.

A prominent steel company executive observed that domestic demand averaged 666 pounds per person from 1911 to 1920; 668 pounds from 1921 to 1940. During the depression, it sagged to 576 pounds. The peak was 978 pounds in 1929.

Based on historical precedent and population trends, the steel executive figured that a peak domestic demand of about 1000 pounds per capita (for normal peacetime purposes) could be expected for many years. Allowing for exports, that placed 1955 requirements at 78.5 million ingot tons, 1975 requirements at 90 million tons.

Projections made independently by an outstanding steel industry consultant placed consumption at 1025 pounds per person in 1955, 1070 pounds in 1960—including a margin for exports. That meant ingot requirements of 76.9 and 82.4 million tons, respectively.

Since the steel industry seldom operated at capacity over the years, the consultant thought that 75 per cent would be a fair long-term average. Based on that rate, indicated capacity was 102.5 million tons for 1955, 109.9 million for 1960.

Many shared the opinions of these two experts: Roughly 100 million tons of capacity would be enough to maintain full peacetime employment and care for emergency needs.

What fooled everyone was the wholly unexpected growth in population and the sudden arrival of the United States on a new, higher economic plateau.

Our population of 165 million is 15 million over estimates made six years ago. Our production of 114 million tons of steel will be enough for 1400 pounds per person, and there's capacity for 1537 pounds.

Now the steel industry is talking about 185 million tons of capacity, or 1888 pounds of steel per person, for 196 million people in 1970.

How will those predictions fit facts six years from now?

If the cycle repeats itself, today's optimist again will be shown up as a conservative tomorrow.

It's an amazing industry!

Irwin H. Such

EDITOR

(Advertisement)

What's New

IN STEEL FROM STOCK

In the news today are many developments of interest to those who specify, buy or work with steel. Ways in which you can raise efficiency and lower costs in your operations may be suggested by the following summary.

Leaded plates—Now lead has been added to E-Z-Cut plate. As a result, E-Z-Cut, which was already considered one of the best free-machining plates on the market, is better than ever. Tests show that New E-Z-Cut cuts even faster, takes a sounder weld and polishes to a better finish than non-leaded E-Z-Cut. And because sulphur content is much lower, New E-Z-Cut is much cleaner steel, free from sulfide stringers. First stocks include thicknesses up through 3".

Biggest stainless steel plates now available from Ryerson stocks. This is the first time that 96" wide plates in thicknesses up to and including 1"—and heavier plates in 80" widths have been carried in stock at plants from coast to coast. Types on hand: 304, 304L, 316 and 316L. Next time, save welding on your big jobs with these bigger plates.

Delivered prices on tubing—Something new in simplified pricing is featured in a booklet just published by Ryerson. For buyers in the 16 metropolitan areas where large Ryerson tubing stocks are located, the booklet gives total delivered prices. There's no figuring to do—no factors to add. For buyers outside these metropolitan areas, a separate book gives prices per 100 feet and transportation charges. And beside every price in all books is a figure that tells you quickly and clearly when you can get a lower price by ordering just a few feet or pounds more. Copies on request.

Give steel-walled buildings a new look with stainless steel siding in mansard pattern, now available for quick shipment from Ryerson. (Galvanized and carbon steel sheets in mansard pattern also available.) The mansard pattern of widely spaced corrugations makes an unusually attractive wall and loss in total sheet area from pattern formation is slight—only about the same as with $2\frac{1}{2}$" corrugated—previously the most economical pattern you could use. Maintenance-free stainless in mansard pattern also has many industrial and miscellaneous-architectural-ornamental applications. New Bulletin 70-5 on request.

New sizes of leaded alloys—Increasing demand for New Rycut 50, fastest machining .50 carbon alloy steel, has prompted Ryerson to increase the range of sizes in stock. Hot rolled rounds, both annealed and heat treated, are now available in large sizes—up through $9\frac{1}{2}$". So heavy shafting, gears, cams, etc. can be produced at savings possible only with Rycut alloys.

Stainless pipe for welding applications—Now there's no need to wait for mill deliveries or to use expensive stabilized types when you want stainless pipe suitable for welding. Type 304L pipe, an extra low carbon type that eliminates the need for stress relieving after welding, has recently been added to Ryerson stocks. Size range: Schedule 40 welded pipe in commonly used sizes from $\frac{1}{4}$" through 2". Schedule 40 seamless in 3", 4" and 6" pipe sizes.

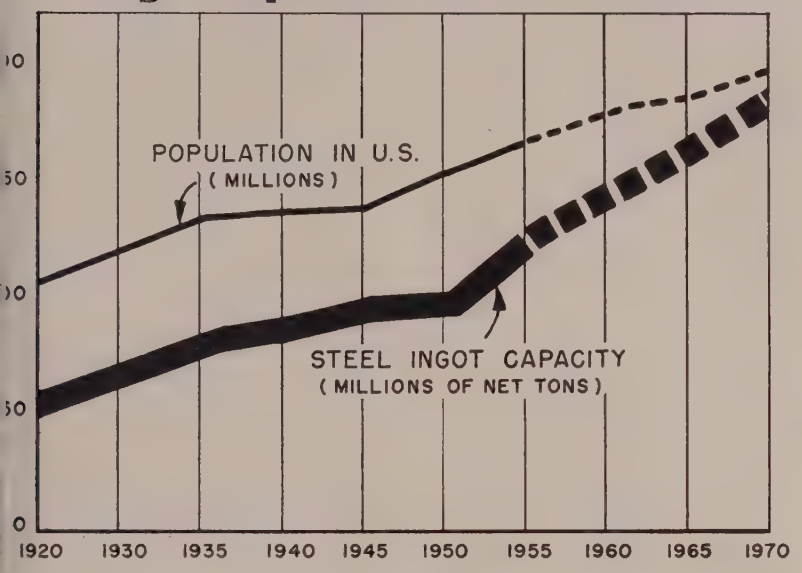
Supply situation on bars, structurals, plates and sheets—Heavy demand makes it difficult to keep all sizes of these products always on hand. However, we do have thousands of tons of steel ready for quick shipment and, since our stocks are being replenished continually, sizes that are not available today may be on hand tomorrow. So call us next time you need steel.

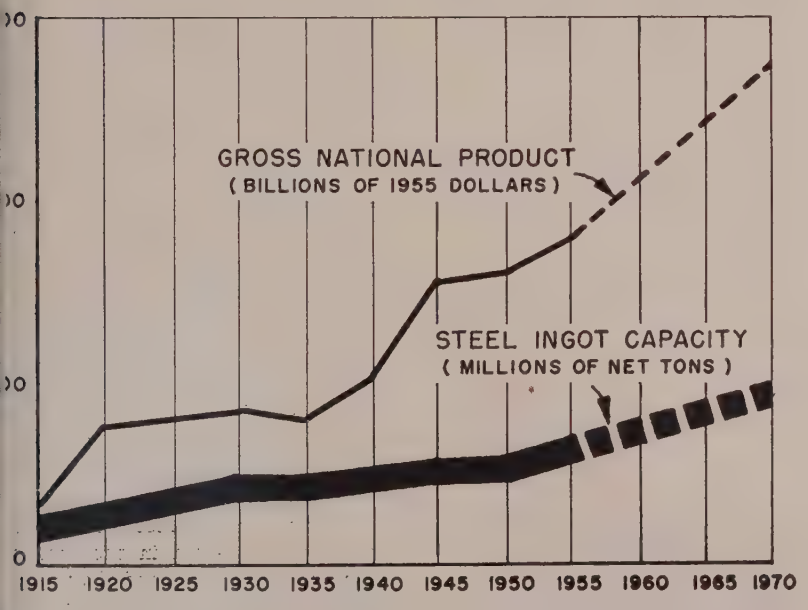
RYERSON CERTIFIED STEELS

JOSEPH T. RYERSON & SON, INC. PLANTS: NEW YORK • BOSTON • PHILADELPHIA • CLEVELAND
CHARLOTTE • CINCINNATI • DETROIT • PITTSBURGH • BUFFALO • CHICAGO
MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

Any way you look at it, there'll be a . . .

Big Expansion in Steel




GROSS NATIONAL PRODUCT
(BILLIONS OF 1955 DOLLARS)
STEEL INGOT CAPACITY
(MILLIONS OF NET TONS)
1915 1920 1925 1930 1935 1940 1945 1950 1955 1960 1965 1970

1955 to 1970 Projections:

Population: U. S. Bureau of the Census
Steel Capacity: Arthur B. Homer, president, Bethlehem Steel Co.
Gross National Product: Commonly accepted estimate

60 million tons in 15 years
5 million tons by end of '56

PUT those raw figures into perspective and you get the full impact of the message they carry.

It took the last 29 years to add 60 million tons of capacity.

44.2 million of those tons were added the last 15 years, the greatest period of growth in the industry's history.

Now there is talk about upping the ante 60 million more tons in the next 15 years!

It will mean 5 million tons of new capacity by the end of 1956.

Over the last 40 years the increase has averaged about 2 million tons a year.

Double that, and you'll have a pretty good idea of what's ahead in each of the next 15.

Food for Thought—The 60-million-ton possibility was suggested by Bethlehem Steel Co.'s president, Arthur B. Homer, in a talk before the American Iron & Steel Institute last May in New York. It started a lot of thinking.

To see what this thinking has developed, STEEL polled the steel company presidents. While they do not agree on a single figure, they are confident of a sizable expansion. Expectations range from a conservative 15 million tons to an optimistic 65 million tons.

A 60-million-ton expansion looks reasonable when you chart (left) the possibilities.

Why the Increase?

Needs for such an expansion stem from: 1. An increasing population. 2. A coming increase in family formations. 3. A rising standard of living.

More People—The nation's population (see chart) will continue climbing and reach 196 million by 1970, a projection by the U. S. Bureau of the Census shows. Population is now 165 million. It would increase to 176 million by 1960, 186 million by 1965.

Family Formations — Although numbers of people are important—for the more there are the more who have to be fed, clothed and sheltered—numbers are not the only factor to consider. Six people (a man, his wife, four children) need only one lawn mower, one refrigerator, one kitchen stove and probably only one automobile. But suppose the same number of people are three couples just getting married. Each couple will need a lawn mower, a refrigerator, a kitchen stove and an automobile—all of which take steel.

Family formations are due to in-

crease in the 1960s, when people born during the high birth rate years of the 1940s reach marriageable age. In the latter part of the 1960s, the number of qualified family formers will be half again what it is now. In 1955, 10,775,000 people were 20 to 24 years old. In 1960 there will be 11,282,000; in 1965, 13,463,000; in 1970, 17,299,000.

Better Living—The third factor requiring an expansion in the country's steelmaking capacity is our improving standard of living.

In 1900, the nation had 556 lb of steelmaking capacity per capita. Today, it has 1537 lb. If steelmaking capacity soars to 185 million tons by 1970 (Mr. Homer), and if population climbs to 196 million (Census bureau), the nation's ingot capacity will be 1888 lb per capita.

When the Increase Will Come

Will the record-breaking expansion be concentrated in a few years or will it be spread evenly over the next 15? STEEL's poll of presidents indicates a surge will come in the early 1960s. That would seem logical. The number of families will increase then.

A Good Start

Some of the expansion already is in the thinking, planning or construction stages.

Republic Steel Corp., Cleveland, will raise its capacity 1 million tons in 1956. Inland Steel Co., Chicago, will increase its ingot capacity 200,000 tons by next year. McLouth Steel Corp., Detroit, expects to expand its capacity 100,000 tons this year and next. Northwestern Steel & Wire Co., Sterling, Ill., may increase its capacity 250,000 tons this year and next. Carpenter Steel Co., Reading, Pa., plans to up its capacity 20,000 tons in 1956.

National Steel Corp., Pittsburgh, will add 300,000 tons of capacity at Weirton Steel Co. and Great Lakes Steel Corp. in 1956. Armco Steel Corp. will get 360,000 more tons of ingot capacity early in 1956 from two new open hearths in Middletown, O., and possibly some additional amounts from improved practices at other facilities. Crucible Steel Co. of America, Pittsburgh, will increase its ingot capacity 66,000 tons in 1956, and Copperweld Steel Co. is thinking about boosting its Warren, O., capacity 300,000 tons.

The Cost

To add 60 million tons of ingot capacity in the next 15 years will cost at least $15 billion at the steel mills alone, if there is no more inflation. At the end of 1953, the steel industry's capital investment was $8.2 billion. (It would be much higher if facilities were valued at today's replacement costs.)

The cost of building an integrated steel plant has been put at $250 to $300 a ton. In June, Bethlehem's Mr. Homer told the Subcommittee on Antitrust and Monopoly of the U. S. Senate Committee on the Judiciary: "A ton of steel capacity in a new integrated plant costs $250 or more, not counting the cost of properties which would supply the raw materials for that plant."

In Contrast—The average cost for the installed capacity as of today is about $70 a ton, Mr. Homer told the committee, explaining:

"The figure of $70 a ton reflects the fact that much of the present capacity was installed before prices attained their present level. It also reflects the fact that an important part of recent increases in capacity has been effected by installment of improved equipment as existing furnaces are rebuilt. When additional steel producing capacity is installed at an existing plant, many economies can be effected through the use of common facilities."

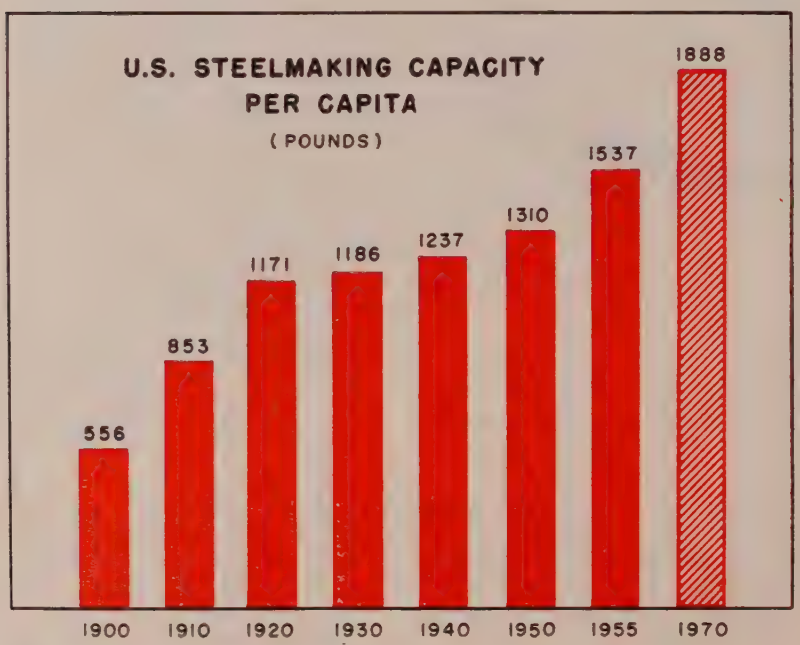
An existing plant can be expanded for slightly more than $100 a ton, Mr. Homer says.

Costly—Any additional capacity that has to be built from scratch, including raw materials supplies, will cost at least $300. In March, before Benjamin F. Fairless retired as chairman of U. S. Steel Corp., he testified before the U. S. Senate Committee on Banking and Currency:

"If you build a steel plant from scratch, as we did in the case of the Fairless Works, and if you provide the necessary sources of iron ore, as we have in Venezuela, you will find that it costs at least $300 to build a single ton of wholly integrated new capacity, complete with all necessary finishing facilities, raw materials resources and working capital."

Replacement, Too

All expenditures for expansion will be in addition to the cost of



eplacing existing facilities as they ecome obsolete or depleted. The verage useful life of present ingot apacity is reckoned at 25 years. Mr. Fairless told the Senate Banking and Currency committee: 'Some will last longer than that, and others not that long; but over the next quarter century, the industry must be prepared to replace its plant completely."

What Type Facilities?

The ultimate cost of the expansion in the next 15 years may depend to a great extent upon what type facilities are used for melting steel. McLouth Steel Corp., Detroit, which recently built a plant to use the oxygen converter to melt steel, says that an integrated plant using the oxygen process is much cheaper to build per ton of ingot capacity than a conventional open-hearth plant.

Probable Trends — In the early part of the 15-year expansion program, most additions probably will be open hearths, steel company presidents indicate. They hint that there might be a strong swing toward the oxygen converter later. It takes time for a new process to win acceptance.

In the oxygen converter process, 25 per cent of the charge is scrap and 75 per cent is molten iron, compared with a 40 to 50 per cent charge of scrap (the rest molten iron) in the open-hearth method.

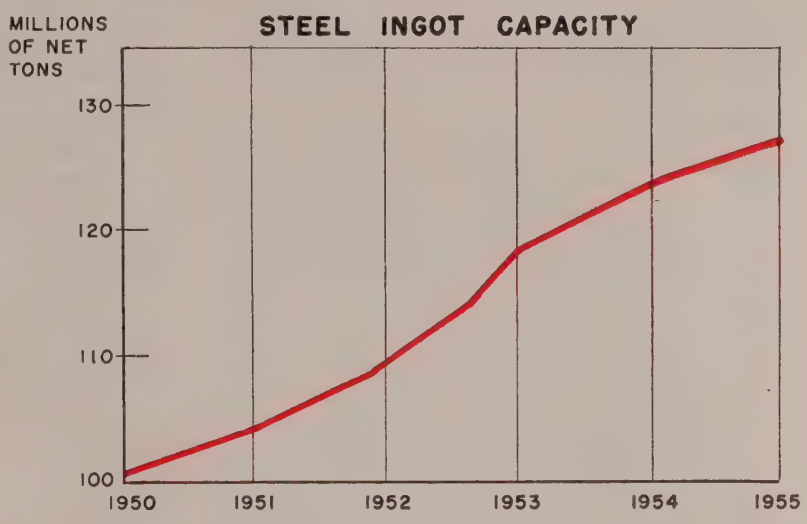
Bigger Need for Iron?—A decided swing to the oxygen converter would require a substantial increase in capacity to produce molten iron. This might take one of two directions or both. Either for reasons of availability or economics, the blast furnace using iron ore might be relied upon for a supply of molten iron. A wide dependence upon the blast furnace would leave large amounts of scrap unused. Economics probably would dictate against that.

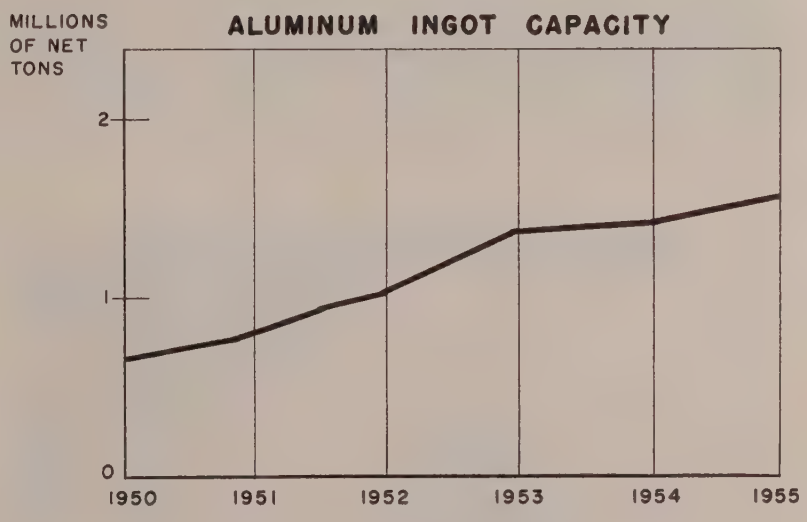
This is where the blast cupola might enter prominently. It produces molten iron from a 100 per cent steel scrap charge. This cupola was developed in Belgium. Barium Steel Corp., New York, acquired the American, Canadian and Mexican rights to manufacture and market it. One began operating last December at the Harrisburg, Pa., plant of a Barium subsidiary—Central Iron & Steel Co. Barium claims the blast cupola provides hot iron metal at a low initial cost, compared with blast furnace pig iron.

Because of the conventional nature of the steel industry, the vast sums of money involved and the length of time required for planning and constructing steel facilities, any change in method in the steel industry will be evolutionary rather than revolutionary.

More Light Products—Although an expansion as large as 60 million tons means there will be more material for all finished forms of steel, the bulk of it appears destined for the light, flat-rolled products, steel company presidents reveal. This is in line with a long-time trend.

Steel and Aluminum: One Helps the Other





They Have an Effect

How many new melting and rolling facilities will be needed depends on how much can be done through improvement of practices and efficiency. If materials can be handled more quickly and if heats

can be speeded, the increased output is equivalent to a capacity increase — without additional melting furnaces and rolling mills.

Inventory Problem — The need for additional capacity could be lightened if the steel industry didn't have to build surplus inventories for consumers at times of peak consumption.

Where the Expansion Will Be

Despite anything that can be done to ease the inventory problem, there will have to be a sizable expansion in steel capacity — to supply our expanding population and satisfy our rising standard of living. What areas will see the most of this steel expansion?

Look for the bulk of it to be in the region bounded on the north by the Great Lakes, on the east by Pennsylvania, on the south by the Ohio river and on the west by the Mississippi.

Factors favoring this area are: 1. It sits astride the center of population (Illinois) and the center of metalworking (Ohio). 2. It has almost half the country's steelmaking capacity—and it's cheaper to add to existing plants than to build new ones from scratch. 3. It's a natural and economical meeting place for iron ore, coal and limestone. 4. The area generates a lot of scrap—another raw material vital in steelmaking.

The tendency will be to hug the Great Lakes shore lines because of the importance of water for cooling and for transportation.

Westward Ho—The expansion will tend to push westward toward the vast consumption area around Chicago. The westward movement of the center of population—about 4 miles a year—has been shoving up steel capacity in the Chicago district. On Jan. 1, 1950, the district had an ingot capacity of 19.1 million net tons, while Pittsburgh had 21.3 million. On Jan. 1, 1955, Chicago's capacity went up to 25 million tons. Pittsburgh's had climbed to only 23 million tons.

Competition No Threat

Will the expansion in steel capacity fail to materialize because of competition from other metals? No. Tonnagewise and applicationwise, aluminum is the nearest competitor. Production of primary aluminum is about 125,000 tons a month; production of ingot steel, about 9.5 million tons.

Steel and aluminum will tend to make business for each other. An aluminum-sided building will need a steel frame. It's akin to the situation in the automobile industry. Years ago, people were afraid the disemployment of buggymakers by the coming of the automobile would ruin the country. Today, every new job in the auto industry creates five new ones in fields supplying raw materials and components.

How To Pay for It

Will the government restraint on fast tax write-offs stifle the steel industry's expansion? Not much. A few programs might not go forward, but they would be the marginal ones. None of the steel company presidents replying in STEEL's poll mentioned the fast write-off as requisite for expansion. They would be welcome, of course.

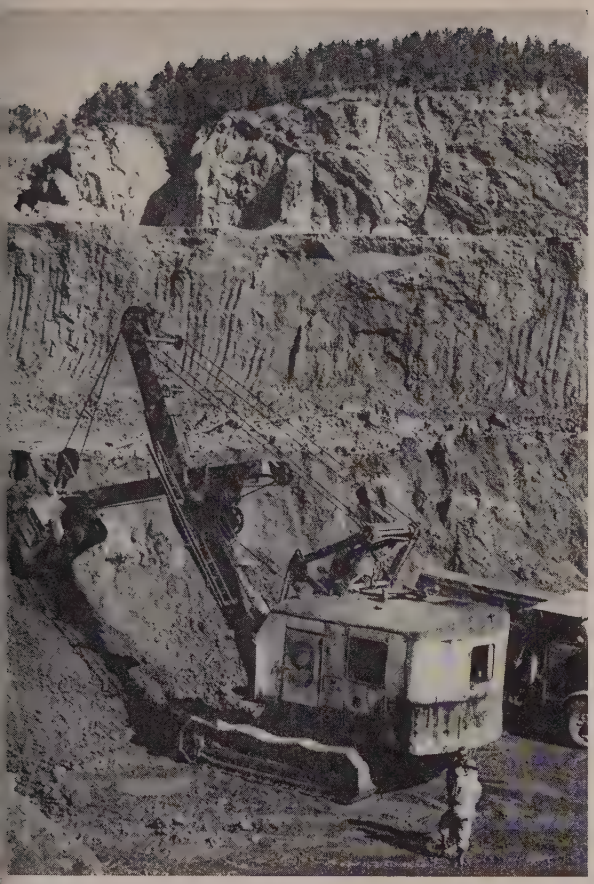
The vast expansion will come because it is needed—because the steel will be in demand. When there's a market for something, a way is found to finance it. Either the customer is willing to pay to get it, or the producer sees a good enough market that he'll provide the investment—even if he has to make quite a sacrifice.

Plowing Back—Mr. Fairless told the Senate Banking and Currency committee last spring that the steel industry has consistently met a good part of its capital needs through reinvestment of earnings. "Presumably it will continue to do so—as it should," he declared.

The fund for expansion, whether it comes from earnings or the sale of securities, would be enhanced by a revision in the federal tax laws to bring what Mr. Fairless calls "a more realistic treatment of depreciation." It would let the steel companies keep more of their income. It would give them more money to work with. It would attract investors.

To unload iron ore faster, U. S. Steel Corp.'s South Works at South Chicago, Ill., installed new Blaw-Knox unloading buckets. Each is 15 ft high, opens to a length of 20 ft, yet is only 6.5 ft wide when closed. A bucket holds 10 tons of ore and does the hardest part of ore unloading—clean-up inside the boat

• *Extra copies of this article are available in quantities from one to three until supply is exhausted. Write Editorial Department, STEEL, Penton Bldg., Cleveland 13, O.*



ONCE THIS WAS A LAKE with water up to the trees, but now it is Steep Rock's iron ore mines in western Ontario, Canada. The shovel is about 300 ft below the old water line. Giant pumps dried up the age-old lake

DOWN THE HATCHES of Great Lakes freighters goes the Steep Rock iron ore from this loading dock at Port Arthur, Ont. The dock's capacity: 60,000 tons, enough to fill three to six ore carriers, depending on their size

M. S. "Pop" FOTHERINGHAM (dark trousers), president and general manager of Steep Rock Iron Mines Ltd., tells U. S. industrial editors, including STEEL's Assistant Managing Editor Vance Bell (with cap) how Steep Rock lake was drained to get at its iron ore. "Pop," who now heads up 800 employees, once had only three helpers, including an Indian boatsman. In winter they got around by dog sled

More Ore for America:

Canada's Steep Rock lake iron mine sets records

IRON ORE for America's busy and expanding iron and steel industry is coming in record-breaking amounts from Canada's Steep Rock lake—the body of water in western Ontario that was drained to get at its treasure.

This year's output stands at 1.5 million tons, with two months of open-pit mining to go. The previous record, 1,326,724 tons, was set in 1951. Daily production is up to 20,000 tons.

Continued development of the project will put production up to 5.5 million tons a year by 1959. Since the company—Steep Rock Iron Mines Ltd.—began mining in August, 1944, it has produced and sold 12 million tons of high-grade ore (53.3 per cent iron for standard grade), mainly to U. S. markets. Reserves in the several proved mines of the Steep Rock range can sustain operations for decades.

When the open-pit mines have gone as deep as is practicable, underground mines using the block caving method will be employed—iron ore is undermined and allowed to pour down through prearranged holes.

A rail haul of 145 miles puts the ore at Port Arthur, Ont., on Lake Superior.

High Spots in Magnesium's Expanding Market

Automotive Industry—The hot chamber process makes it possible to increase production speed and maintain closer tolerances in small diecastings, making unit costs more competitive. Benefit: The automotive market is expected to increase substantially.

Appliances—Cheaper and better diecastings are expected to pay off in this market, also.

Materials Handling Equipment—Light weight and good structural characteristics are contributing to greater use in truck bodies, push carts and tote boxes. This is one of biggest fields of advancement for magnesium.

Photoengraving—Improved magnesium plates and the fast etching process have opened a market that could consume 5000 tons a year.

Air-Borne Equipment—The need for light weight makes mag a natural for the radar equipment market which could reach 1500 to 2500 tons by 1960.

Dry Cell Batteries—Now nearing the marketing stage, this product is a potential consumer of 18,000 tons annually. Cells yield twice the light and have twice the life of conventional ones.

Luggage—Shwayder Bros. Inc. has entered this field with its Ultralite Samsonite; others are considering the move. The potential market will be about 400 tons of mag within two or three years.

Tooling Plate—Introduced within the past year, acceptance has been good because of mag's lightness, machinability and freedom from warpage.

Textile Machinery—When technical difficulties are ironed out, this market should expand. Prospect: 300 to 350 tons annually.

Alloying Agent—Already the biggest user of ingot, aluminum will use even more mag as production increases. About 1 lb of mag is required for every 100 lb of aluminum. Potential market: 15,000 tons annually.

Titanium Industry—The Kroll process for reducing titanium requires 1.2 lb of magnesium for each pound of titanium sponge. About 10,000 tons of mag will be used in 1955. Potential market is limited only by the use of titanium—unless a new reduction process eliminates mag.

Nodular Iron—Magnesium gives gray cast iron properties similar to many alloy steel castings. As benefits become better recognized, this year's market of 500 tons will increase.

Cathodic Protection—Protection of hot-water tanks, underground pipelines and ocean-going vessels consumed 5500 tons of mag last year and the market is increasing rapidly.

Magnesium: A Metal That's Going Places

IT'S LIGHT . . . easily worked, machined, formed and welded . . . is a good alloying agent . . . has a high electrochemical equivalent and useful voltage . . . good structural characteristics . . . and is competitive, volumewise, with other nonferrous metals.

Put those properties together and they spell magnesium, the metal that became popular as a substitute during the war. It's now coming into its own in an expanding metals economy.

Outlook—"The progress of the magnesium industry in this country is limited only by the ingenuity of its members to find new uses . . . and their ability to get out and sell their products."

That comment from one of those members is typical of the attitude of most of the industry. There is no limit to the supply of raw material. Mag, as industrymen call it, is the sixth most plentiful metal in the world—there should be little difficulty in reaching a consumption of about 325,000 tons a year by 1975 (see chart). Estimated consumption of primary magnesium this year will be about 50,000 tons, and use of secondary metal will hold at the 1954 figure of about 11,000 tons. This could well be the best year magnesium has had since 1944.

Because it is a relatively new metal, research, which is intense, is just beginning to pay off. The partial list above gives an indication of this advancement.

Turnabout—A big part of the growth is in wrought products, which took a back seat to castings for many years. Until 1953, there had been a serious shortage of mill facilities for sheets, plates and extrusion stock. That year, Dow Chemical Co., Midland, Mich., opened its plant at Madison, Ill. This assures potential users of an adequate supply of mill products for several years.

One thing holding magnesium back from consumers' markets is the blue-gray oxidation that forms on its surface. Chemists and metallurgists are working on several finishes which hold promise.

Matter of Competition—One of the biggest problems of the industry is the lack of primary producers. Dow Chemical is synonomous with magnesium because it is the only primary producer. Its officials are keenly aware of this situation and would welcome others into the field. Their patents on the sea-water process have run out, and anybody who can afford to build a new magnesium plant is free to do so. Nobody has, so Dow feels it has a monopoly by default.

However, several persons close

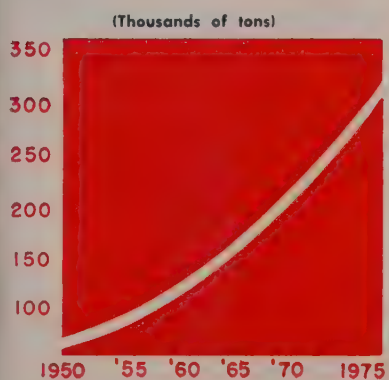
to the industry have hinted that within the next two years one, possibly two, new producers will appear.

One question would be the government's willingness to grant fast amortization and to guarantee a market. Washington has cracked down on fast write-offs, but there are those who think the certificates would be granted. The government has several high-cost plants on stand-by, and another plant at Canaan, Conn., is producing for the Atomic Energy Commission.

Secondary Opinions — Members of the secondary industry are definitely in favor of another primary producer. One smelter put it this way: "Until there is some competition . . . it is dubious as to when magnesium will become a real factor . . . as it could well be." Many persons in this business feel that they cannot compete with Dow's magnesium alloys. Some have turned to cathodic protection, where they are competitive.

Two price increases this year have resulted in a level 7 cents a pound above that of a year ago. Latest wrinkle is a dual pricing system: Some types of consumers pay 2 cents a pound less than others. One industry official said it is the first time in his long memory of the nonferrous metals business that this has happened. Early reaction to the move has been mixed, but the industry is watching to see what influence it will have on the growth of this light metal.

Magnesium Consumption*



Source: President's Material Policy Commission report

Railroads: Diesels Show Way

General Motor's Curtice says that diesel economy will speed rail transportation to new records. Diesel sales will double in the next ten years, he predicts

HARLOW CURTICE applied some of his famed auto output optimism to diesel power last week at General Motors' "Powerama" opening:

"Ten years from now," the GM president predicted, "General Motors will have produced its second 100 million of diesel horsepower." Powerama marks the production of the first 100 million—a job that took GM 22 years.

Economy — The biggest impact of diesel power, Mr. Curtice pointed out, has been in railroad operation. Diesel displacement of the "iron horse" as undisputed king of the rails has provided the railroads with $600 million annual savings in fuel and maintenance costs alone.

The lightweight diesel also has made possible practical, efficient railroad passenger car air conditioning. It has stimulated the development of the frozen foods industry by providing dependable refrigerator car service.

Growth—"I do not foresee the day when a saturation point in the needs of the railroads will be reached," remarked Mr. Curtice. "The nation's growth—an estimated gross national product of $500 billion by 1965— will require more and more trains to keep commerce moving and more and more locomotives to haul the trains."

Here's what Mr. Curtice predicted:

1. Further acceleration in the growth rate of the diesel market.
2. New developments, including substantial increases in horsepower per unit of weight and improvement in fuel economy.
3. New applications of diesel power plants. Two holding "tremendous promise" include oil drilling rigs and mobile electric power units.
4. Development of new mechanically refrigerated freight cars. With subzero temperatures, they will revolutionize the transportation of perishables and make the old-style ice-packed reefer look "as obsolete as the steam engine."
5. Great expansion of the road machinery industry because of market potential and forward strides in product development.

Calling the nation's need for better highways one of our most pressing problems, Mr. Curtice charged that Congress' failure to act on President Eisenhower's road program means the nation continues to suffer an estimated $5-billion loss annually.

He urged Congress to make enactment of highway legislation its first order of business when it reconvenes in either special or regular session.

Electronics: No. 1 Industry?

By 1965, electronics sales may top those of either the steel or automobile industry.

Gross dollar value of electronics sales and services will hit $20 billion by 1965, estimate authorities at the Western Electronics Show and Convention which got under way in San Francisco last week. Last year's electronics sales were $8.8 billion. Steel mill sales were $10 billion; auto industry sales, $11.1 billion.

Forecast: National defense will increase its take of electronics industry output during the period. Current military procurement for electronic equipment runs 6.3 per cent of total defense spending. Estimates are that this will increase to 10 per cent by 1965.

Paul B. Wishart, president, Minneapolis-Honeywell Regulator Co., told a symposium on electronics and automation production that small business will provide the volume market for automation equipment. He foresees the development of standardized automation equipment, "to meet the common denominator requirements of hundreds of thousands of small and medium-sized companies."

By E. C. KREUTZBERG *Washington Editor*

Wide World

Dig out and rebuild is the order of the day as . . .

U.S. Speeds Disaster Aid

GOVERNMENT ASSISTANCE programs, with "strong teeth," are helping to clear away the aftermath of Hurricane Diane.

Spurred by messages from the White House and directives from the Office of Defense Mobilization and the Business & Defense Services Administration, Army engineers sprang into action to rebuild destroyed or damaged publicly owned facilities — hospitals, schools, water systems, etc.

Action—Now, other agencies are inaugurating long-range programs to revive prostrate industries. The Small Business Administration is setting up a field loan service in the flood stricken states which will have authority to make on-the-spot 3 per cent industrial loans without sending them to Washington for approval.

Approved by ODM, the Metalworking Equipment division, BDSA, is sending men to the disaster areas to speed action in leasing government-owned machine tools and other equipment to get companies back in production. Note of interest: Flooded plants can get government equipment on lease whether they are to be used on defense or *civilian work*. In the past, leases were approved only when they were necessary to induce companies that made war materiel to maintain and store the "packages" until needed.

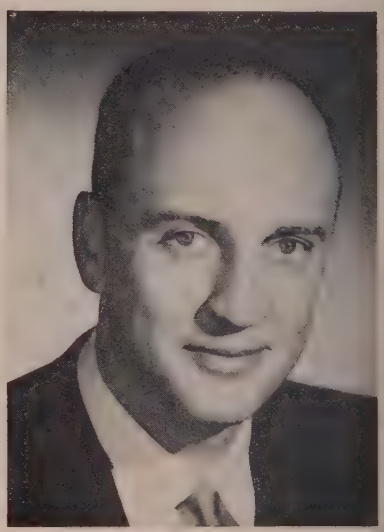
Leases on government equipment will run until the lessee can get delivery of replacement equipment. At present, no lease may run for more than one year. All equipment, says ODM, will be leased at the rate of 1 per cent a month of the acquisition cost. All shipping and installation costs will be paid by the lessee.

Two Examples—The first piece of equipment furnished by BDSA is a direct-current generator, loaned by the Navy. After the unit is in operation, a contract will be drawn up. The Army has leased 35 locomotives (diesels and electrics) to help restore traffic in the flooded areas.

BDSA instructed copper producers by telegraph on Aug. 26 to provide metal to fabricators for relief in flooded areas. The metal supplied will be a diversion from stockpile deliveries. Some 26,000 tons of copper, to be delivered to stockpile on Dec. 31, 1955, and March 31, 1956, has been deferred until June 30, 1956.

Policy Change?—DOD directive 4215.2 recommends that the government increase its rental rates for units which are leased to manufacturers of nondefense items. While this is under consideration at the Pentagon, the current leasing of equipment at 1 per cent for either defense or civilian production will establish the pattern for at least one more year.

Many government officials contend that a charge of 1 per cent on the acquisition cost is entirely fair. They point out that 1 per cent per month yields 12.7 per cent on a one-year loan, 14.4 per cent on a three-year and 16.3 per cent on a five-year agreement.



Meet William J. Edmunds Jr.: He's the new director of the Aluminum & Magnesium division, Business & Defense Services Administration.

Mr. Edmunds, an executive of the Kaiser Aluminum & Chemical Corp., has been employed in production capacities with fabricating plants in the primary aluminum industry since June, 1940. In Washington, he may be contacted by calling Sterling 3-9200, Ext. 4437.

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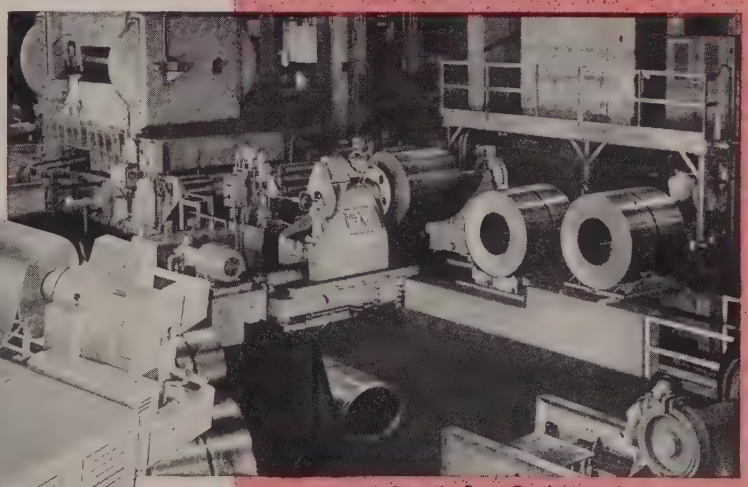

Automatic Press Feed Lines

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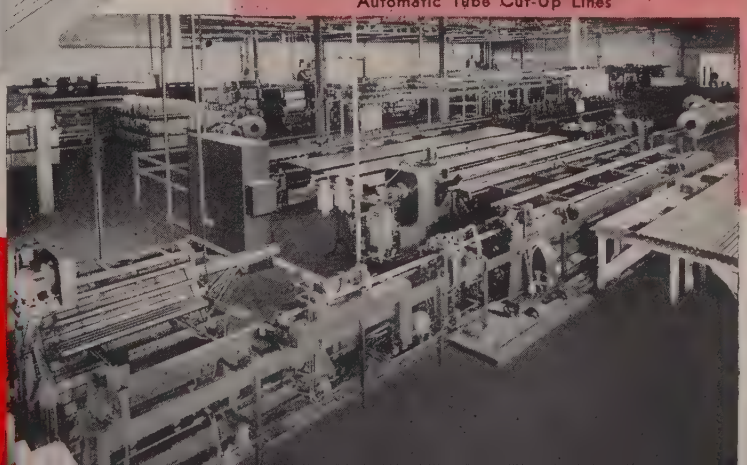

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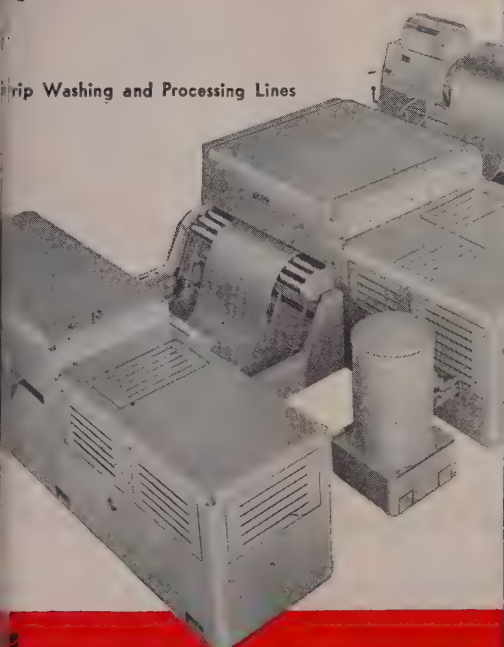

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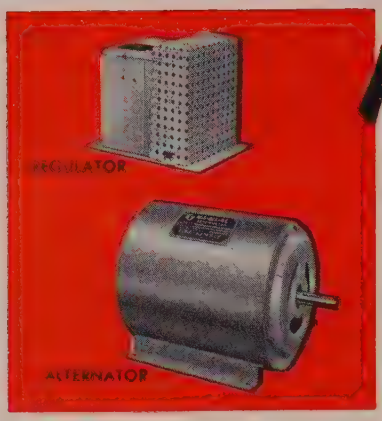

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This unique S-K development also insures excellent transient response: upon application of full load, voltage recovers in one second or less. Speed of prime mover is not critical because regulator keeps output voltage proportional to output frequency. Thus, standard motors may be operated over a wide frequency range without overheating.

MO-BIL-AC is available in 3, 5 and 10 KW ratings, 60 cps, single and polyphase, any commercial voltage.

Write or phone for full descriptive literature.

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MIEHLE PRINTING PRESS & MFG. CO.

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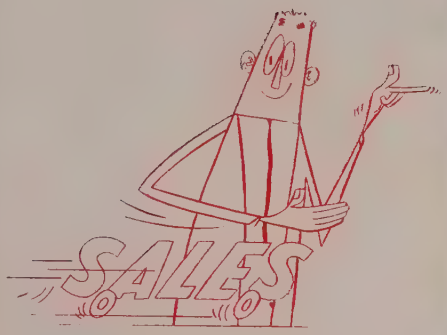


Sales VP Directs "Calendar Of Calls"

AS TRAFFIC MANAGER for the DoAll Co., Des Plaines, Ill., some 14 years ago, L. R. Rothenberger was responsible for scheduling. Goods had to be at the right place at the right time.

Now, as vice president in charge of sales for DoAll, it's a different form of scheduling that is important to him—getting salesmen to the right customer at the right time.

Mr. Rothenberger, sales vp since 1946, says "One of industry's biggest problems is obtaining better control over salesmen's activities. . . How do you help them do a more efficient job? We do it with a 'calendar of calls'."

How It Works—Each salesman is given a weekly list of contacts he must make. This averages 30 to 40 calls, depending upon the geography of the territory. Another must: At least one demonstration per week. DoAll was one of the first metalworking firms to adopt the idea of selling machine tools by demonstration at a prospect's plant. It is still a major part of the sales program, and the firm has averaged better than 150 demonstrations per week this year.

Advantages—"This schedule by no means takes up all the salesman's time," explains Mr. Rothenberger. "He still has time to make outside-the-calendar contacts and normal service calls. But it does establish a minimum target.

What was the salesmen's reaction when the program was set up less than a year ago? "Excellent," says the sales vp. "They helped establish their calendars. We feel it has been a major factor in boosting our sales 7 per cent above last year's."

For the salesman, the calendar forces him to make regular visits to all prospects so that he becomes better acquainted with their problems. The prospect, in turn, gets to know more about the salesman and his products.

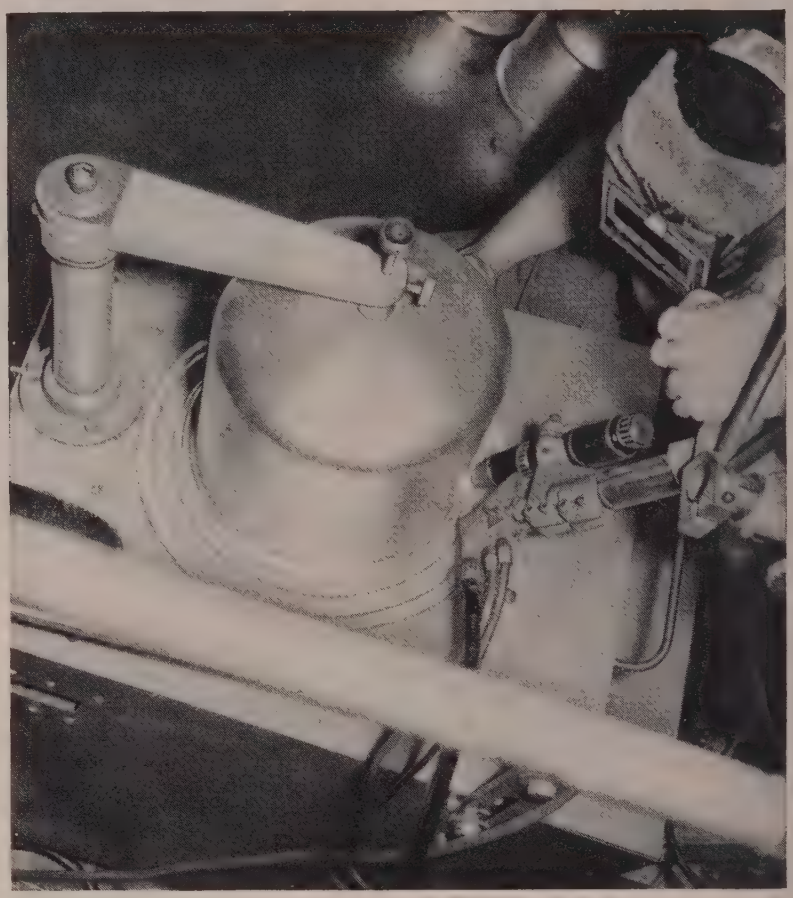
Great Equalizer—Another factor in the "must call" system is its tendency to maintain balanced sales effort. It's only human for a salesman to fall into a pattern of pushing the high-commission items by concentrating on prospects most likely to buy them. The calendar keeps him going to every customer, selling all products.

If you are considering setting up a "calendar of calls" system, make sure you: 1. Don't overload the salesman. 2. Don't let the salesman change the calendar until it has had a chance to succeed (DoAll's salesmen must submit written requests for changes). 3. Establish an efficient control system in the home office to keep check on the salesman's calls.

PRODUCTION *Zooms* 1000 PER CENT

with

Mechanized HELIARC Welding



A HELIARC HW-13 torch is being used to weld a 1/8-in. aluminum radar cover.

A West Coast aircraft plant is using mechanized HELIARC welding to join the components of aluminum sealing covers for radar units—the "Seeing Eyes" of the Armed Services. Welding time has been cut from one hour and 10 minutes to only six minutes and the plant now turns out eleven covers in the same time it had formerly taken to produce one. Because the HELIARC welds are shielded from contamination by an inert gas, such as argon, they require no flux and are free from porosity and oxide inclusion. This results in fewer rejections and a minimum of finishing.

LINDE's team of welding processes—HELIARC, sigma, and UNIONMELT welding—can help you cut production costs and increase quality. Whatever your welding problem—one of LINDE's electric welding processes can do the job efficiently and economically. Call your local LINDE representative today for more information.

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Tabor Mfg. Co.

Overhead sand system helps speed production molding

Gray Iron Market Rebounds

INCOMING ORDERS in March gave the first indication that the gray iron casting market was reviving.

"Now," says Donald H. Workman, executive vice president of the Gray Iron Founders' Society, "1955 shipments should equal or possibly top the 13.7 million tons shipped in 1953."

Gray iron castings are being used more, too. In 1943, their per capita use was 135 lb. By 1953 it was 170 lb. With new business flowing in, lead times are increasing. May's unfilled orders were up 21 per cent over the previous year's.

Profits Return — Foundrymen have recouped most of the price cuts that were "whipsawed" out of them in 1954. Increases range from 4 to 10 per cent. Frank Sherwin, president of the Chicago Hardware Foundry Co., says: "We've boosted prices 5 per cent this year, but it certainly doesn't reflect our over-all increase in labor and material."

Competition is still intense. In the last 2½-years, 225 gray iron foundries went under. Midwestern foundrymen explain that if cost accounting or modernization is neglected, a foundry can't avoid having a difficult time in today's market. The trend is decidedly toward fewer foundries producing more castings. However, the small jobbing shop still has a strong advantage: Its size gives added flexibility.

Help Wanted—Many foundries are unable to get the type labor they need. While most industries started to recover from the 1954 dip in the last quarter, foundrymen had no real need to increase employment until this spring. By this time most of the labor market had been cornered.

New foundry processes and improvements are expanding the industry's market potential. About 150 have adopted shell molding. By paying more attention to design, producers have been able to convert additional jobs to gray iron. Many of the stators and end brackets of the new NEMA motors are being cast in gray iron. Air conditioning is becoming a good market.

Future—With peak levels assured for the remainder of this year and the first half of 1956, look for the industry to spend more time on design and market research. Objective: More business.

Not Enough Freight Cars

The freight car shortage is continuing and may get worse as the heavy loading season approaches. The Association of American Railroads says the average daily shortage of plain boxcars (reported by class I U. S. roads) was 9863 for the week ended Aug. 6.

July freight car orders were 19,926, the highest since January, 1951. The backlog on Aug. 1 was 45,515.

Until new cars are built (and older ones rebuilt), the association suggests:

1. Load and unload cars promptly.
2. Furnish shipping instructions promptly.
3. Notify the railroad immediately when cars are ready.
4. Load and unload cars six days a week, seven if necessary.
5. Remove all dunnage, blocking and debris from cars.
6. Order only the number of empties needed; specify routing and destination.
7. Select empties to promote loading to, toward or via owners' rails. Use car selection charts.
8. Load cars as heavily as practicable. Don't contaminate high-class cars.

Machine Tools for Today and Tomorrow!

The most versatile vertical turret lathe available to the metalworking industry...

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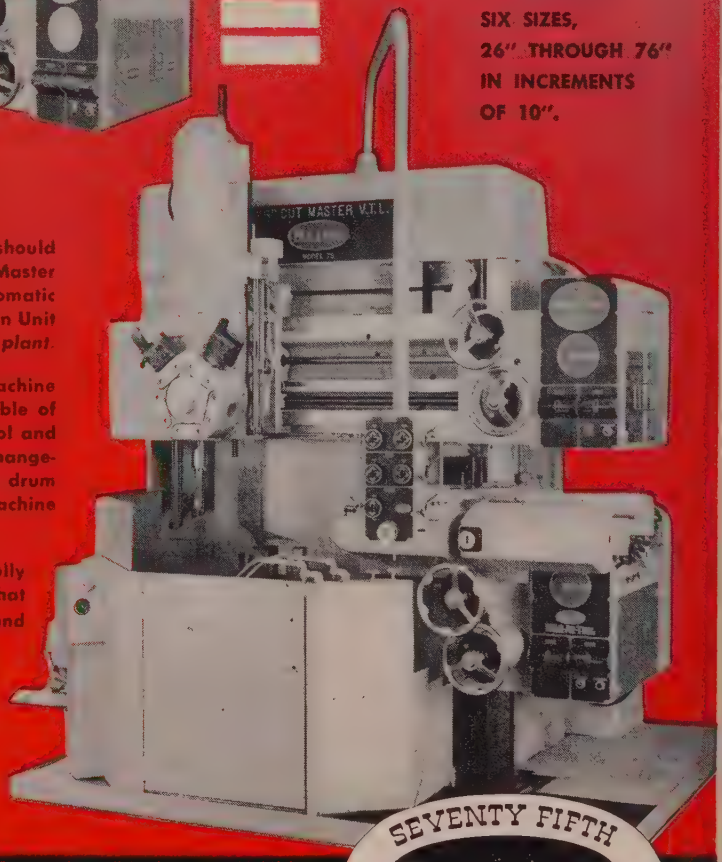
AVAILABLE IN SIX SIZES, 26" THROUGH 76" IN INCREMENTS OF 10".



Versatile because at the time of purchase should your production output require only a Cut Master V.T.L., Model 75 and later increase so that automatic operation is desirable, a Man-Au-Trol Conversion Unit can be added to the Cut Master *right in your plant*.

The Man-Au-Trol Conversion Unit directs the machine through all the functions the machine is capable of performing — automatically — by use of control and function drums. Machine down time for job change-over is reduced to a minimum since the control drum can be pre-set in advance and placed in the machine in a matter of seconds.

Your Bullard Sales Engineer will be glad to fully explain all of the technological advantages that are incorporated in the Man-Au-Trol, Model 75 and apply them to your machining problems

THE MACHINE TOOL SHOW

PLAN TO VISIT OUR EXHIBIT AT BOOTH 1212

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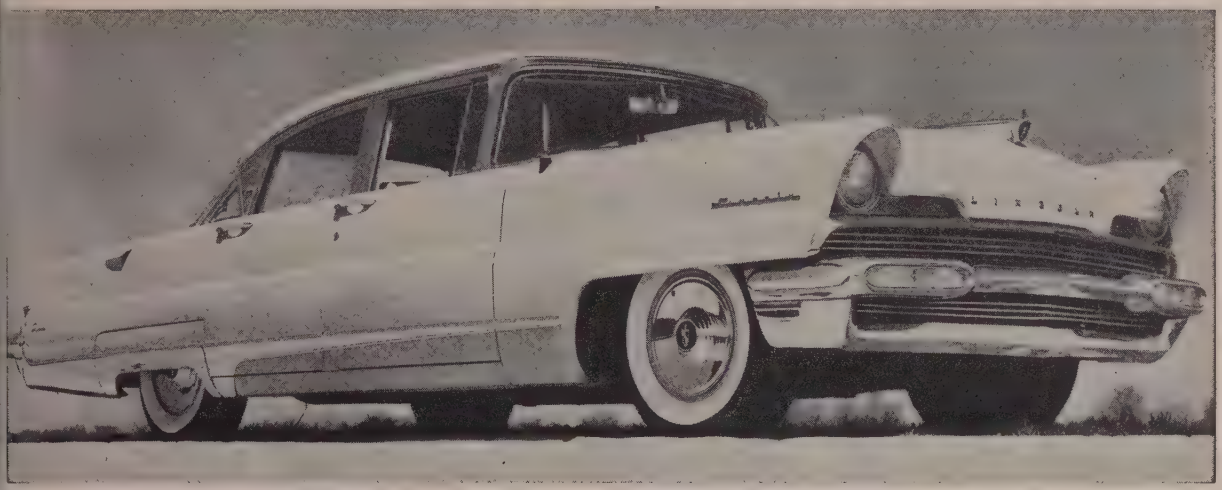

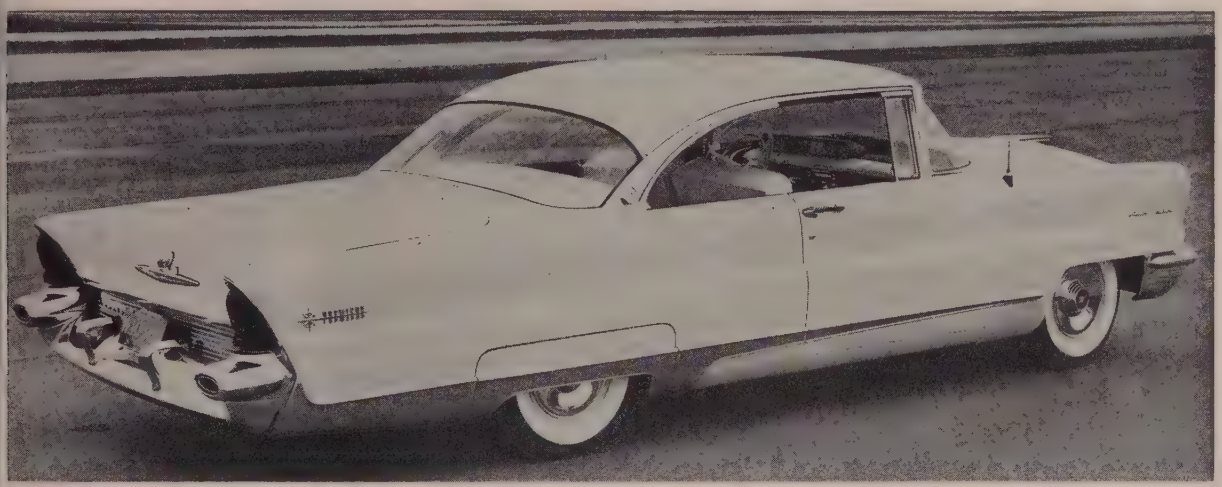

Lincoln Is First To Unwrap '56 Models

DON'T EXPECT the Lincoln for '56 to be a foretaste of what's to come. Most models will not have the number of new features that are incorporated in the nation's only car named after a Republican president.

Most striking is the new body which brings the division into the wrap-around fold. The car is more than 7 in. longer, 2½-in. lower and 2 in. wider than 1955 Lincolns. Available in Detroit's regalia of bathroom colors, the car has a look which many will find appealing.

Jets Next?—Power is supplied by a changed engine which is souped to 285 hp, with 368 cu in. displacement and a 9 to 1 compression ratio. A startling fact: Torque rating is 401 ft-lb at 2800 rpm. This hikes 0-80 mph acceleration 14 per cent over the 1955 product.

The former top luxury Capri is supplemented by a new gingerbread wagon called the Premiere. The interiors are done in Lincoln's traditional feeling of unobtrusive freshness and retain the same fine instrument positioning in a new dash. Also of note is the new Safety-Flex steering wheel, with recessed hub, to reduce the danger of driver "chest cave-in" in a collision.

Safety First—Other safety features include the safety door locks which incorporate a plate behind the rotor to prevent the door from springing open, a rear view mirror with glass which will not pop out under impact and seat belts (optional).

A test drive reveals a car which improves on the fine handling of its 1955 counterpart, coupled with better performance. This is particularly noticeable in the passing range. Roll in the corners is still apparent, but is of no dire consequence. The driver seems to be positioned nearer the roll center in the 1956 model which contributes

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to a feeling of security when cornering.

A Flaw or Two—Visibility is not particularly improved with the wrap-around windshield — though unlike some makes, it is not impaired either. Still on the unimpressive list is transmission performance. Even with the torque of the reworked engine, the Lincoln still fails to deliver a "belt-in-the-back" when the throttle is in the mashed position.

Lincoln is among the finest handling machines plying our overcrowded highways today, and if you've liked its fine features before, you'll be more pleased than ever with the 1956 version.

Meanwhile, the battle for leadership continues. If you are getting bored with the Ford-Chevrolet claims and counterclaims, take a look at the hefty battle shaping up for third place.

Plymouth Vs. Buick—Plymouth, the traditional third-place make in the industry, dropped its niche last year in what many considered to be merely a styling coup. In 1955, styled to the eyeballs, Plymouth is still in fourth place. This, say company spokesmen, is caused by its lack of V-8 engine facilities.

Statistics—Dependent on Dodge for its V-8's during the model run, Plymouth has equipped about 153,000 of the 373,000 cars registered during the first seven months of the year with this engine. During the same period, its production lagged Buick by some 19,000 units. This difference, maintain Plymouth officials, would have been made up if V-8's were available.

The all V-8 Buick recently added fuel to the third place controversy by a statement made by Ivan Wiles, general manager, Buick Motor division. He said that expansion now under way would "increase Buick capacity to 1 million cars a year by the end of 1956."

Roaring Back—About the same time, Plymouth's prexy, John P. Mansfield, made the statement that Plymouth would have capacity for 835,000 cars yearly with its new engine plant. Conclusion of industry observers: Buick, on paper, could outproduce Plymouth by 165,000 annually.

Confusing the issue is the fact that capacity statements vary with conditions. Plants may work one shift 8 hours—sometimes 9. And they can work two shifts 9 hours and tack on Saturday as a workday.

Better Judge — Hourly production figures are more comparable, and for this reason, automakers often shy away from using them. Though hourly production figures can fluctuate, it is within relatively narrow limits dictated by efficiency.

Buick's V-8 engine plant is capable of producing about 180 engines per hour as it is set up. The expansion program planned will include a third line to supplement its two process lines. This should hike the number of engines produced about 50 per cent—from 180 per hour to something in the neighborhood of 270.

Plymouth, in the other corner, announces the capacity of its V-8 engine plant, just getting under way, at 150 per hour by November. That adds up to 310 engines hourly for Plymouth, compared with 270 hourly for Buick.

Other Problems — Bottlenecks can exist which will make such output needless. Plymouth's tight spot, for example, is reported to be bodies. Output in Detroit is 180 bodies per hour, 121 hourly in other assembly plants. This adds up to some 301 bodies per hour, compared with 310 engines.

Auto, Truck Output

U. S. and Canada

	1955	1954
January	780,780	594,467
February	770,530	574,215
March	955,027	672,858
April	936,994	676,269
May	913,257	621,318
June	825,031	635,540
July	815,061†	543,344
August		523,799
September		364,441
October		312,078
November		616,395
December		761,954
Total		6,896,678

Week Ended	1955	1954
July 30	199,788	130,523
Aug. 6	170,004	124,168
Aug. 13	175,822	119,208
Aug. 20	165,094	121,736
Aug. 27	152,729†	113,496
Sept. 3	145,000*	110,995

Source: *Ward's Automotive Reports.*
†Preliminary. *Estimated by STEEL.

Buick's Achilles' heels lie in the forge shop, transmission, rear axle and sheet metal facilities. All these areas are due for expansion to more closely balance the expected engine plant capacity. Plymouth, too, will be announcing additional capacity.

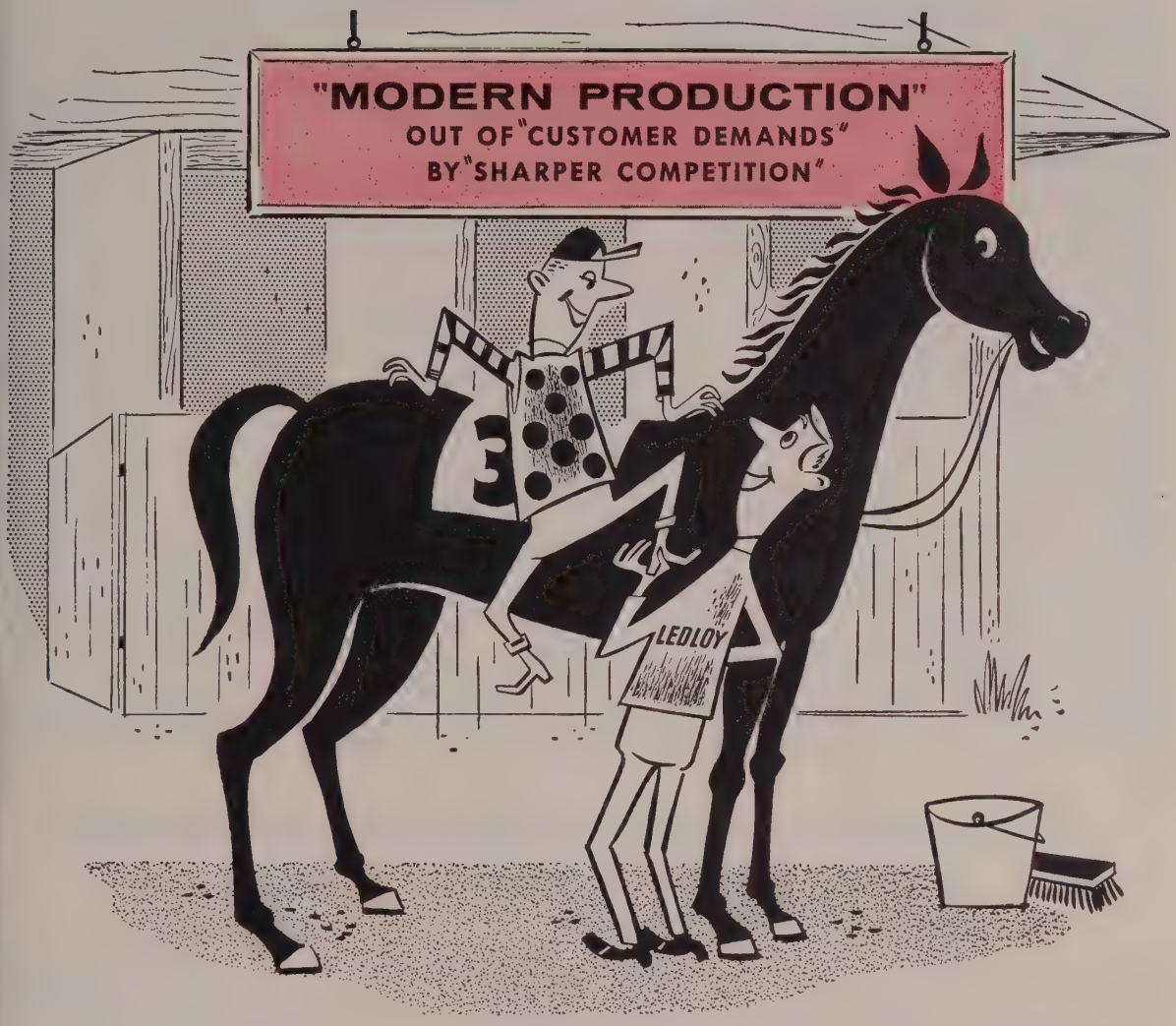
Crux—Sales are the true key to third place leadership. Unless Plymouth and Buick can sell all the cars they can produce, capacity figures are meaningless—any gap could be plugged quickly by either producer.

And when it comes to sales, interesting things are in store as Plymouth and Buick intensify their respective sales approaches with one thought in mind: Gain third place in automotive leadership.

Chrysler's president, L. L. Colbert, already has announced plans for the development of separate dealerships for the Plymouth division, as well as for Dodge, DeSoto and Chrysler. With the new move, the dealer and salesmen will be able to concentrate all their skills on one line of cars, and Plymouth can be expected to benefit most from this change in merchandising.

At the time Plymouth was introduced in 1930, the present system of selling Plymouths through dealers who handle one of the company's other car lines gave the new car an established nationwide dealer organization. While the system was effective in its immediate objective, Plymouth has always had to take on the competition of one of the corporation's higher-priced makes on the showroom floor. Now, Plymouth will no longer be a "second cousin" to another Chrysler product.

No slouch in salesmanship, Buick has the advantage of a price spread (some $1300) from the low-to-high-priced models. In addition, while Plymouth is relatively comparable to its competitors in the low-priced field, Buick offers such features as the only shiftless transmission in the business and the only torque-tube drive. It's not accidental that men who like Buick cannot find their wants satisfied easily elsewhere. The battle will continue for third place into 1956. It should be a honey.



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If you're "left at the post" in today's race for quality production at competitive prices, better study Ledloy's* form sheet.

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For proof of increased production at lower costs, try a partial run with Aristoloy Leaded Steel.

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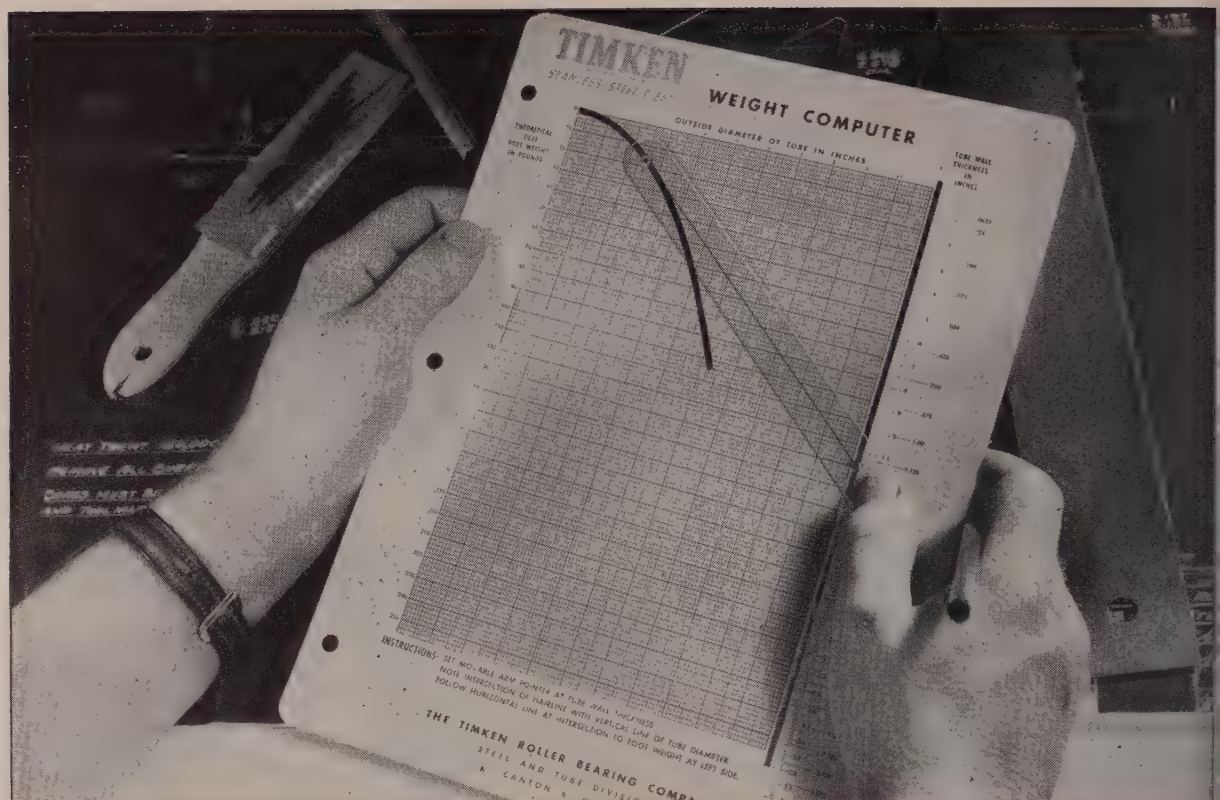

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WITH this handy little computer, you can quickly figure the weight of steel tubing. You set the slide at tube-wall thickness and O.D. and simply read off the tube weight per foot. Write us and we'll send you one. There's no obligation, of course.

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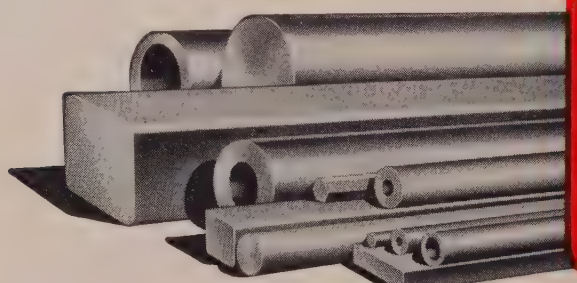
YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH



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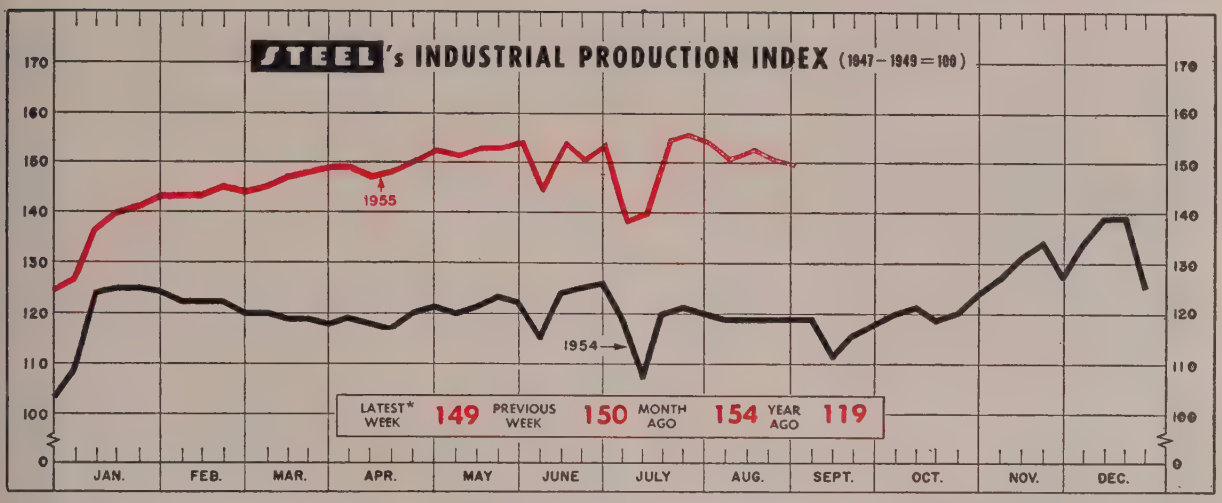

*Week ended Aug. 27. Based upon and weighted as follows: Steel Output 35%; Electric Power Output 32%; Freight Car Loadings 22%; and Auto Assemblies 11%

Inflation Won't Blow Up the Economy

TELEVISION antennas will cost 10 per cent more . . . National Carbon Co. ups electrode prices from 1½ to 7 per cent . . . Bureau of Labor Statistics cost-of-living index edges up . . . Purchasing agents extend buying lead time.

Danger signals for the economy?

No — Higher wages all round and increased prices for steel and other raw materials do cause an inflationary bias. Prices must move up, if they move at all. But increasing productivity will pay some of the bills, and competition will help prevent any price spiral. If problems get too hot for industry to handle, Uncle Sam already has shown a willingness to help.

Recent credit restrictions have had the healthy effect of taking the lunatic fringe out of the consumer goods market. Autos, appliances and other consumer durables will go right on selling this year. The pace won't be so frenzied, but chances for it to continue strongly through 1956 are improved.

Adjustment—With factory payrolls consistently on the rise, and competition holding prices down, consumers will be encouraged to keep on buying. In appliances, though some scattered price breaks have been coming through in the last month, no general upswing is in sight.

The cost-of-living index has been practically static since last year. July's fractional increase was due almost entirely to increased costs of food and services. The new level is still under that of a year ago.

Top Dogs—Consumers are sitting on top of the heap. Adjustment to a new set of costs won't be easy for any metalworking company; marginal producers may get their lumps.

Though next year's family flivver will cost about 7 per cent more to produce (averaging out effects of labor and materials costs and productivity increases) less than 4 per cent ($100) probably will be passed on. Large volume producers will find their profit margins

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	2,264[1]	2,186	1,525
Electric Power Distributed (million kw-hr)	10,600[1]	10,812	9,207
Bitum. Coal Output (1000 tons)	9,480	9,320	7,540
Petroleum Production (daily avg.—1000 bbl)	6,700[1]	6,635	6,156
Construction Volume (*ENR*—millions)	$265.3	$322.2	$224.2
Automobile, Truck Output (*Ward's*—units)	145,000[1]	152,729	113,496
TRADE			
Freight Car Loadings (1000 cars)	800	781	667
Business Failures (Dun & Bradstreet, no.)	216	169	184
Currency in Circulation (millions)[3]	$30,288	$30,336	$29,786
Dept. Store Sales (changes from year ago)[3]	+6%	+3%	0%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$10,142	$10,579	$17,373
Federal Gross Debt (billions)	$276.9	$276.7	$274.7
Bond Volume, NYSE (millions)	$25.1	$16.7	$15.0
Stocks Sales, NYSE (thousands of shares)	9,795	7,274	10,112
Loans and Investments (billions)[4]	$84.2	$84.4	$82.9
U. S. Govt. Obligations Held (billions)[4]	$31.3	$31.6	$36.2
PRICES			
STEEL's Finished Steel Price Index[5]	207.63	207.63	194.19
STEEL's Nonferrous Metal Price Index[6]	259.1	240.7	214.7
All Commodities[7]	110.5	110.3	110.0
Commodities Other than Farm & Foods[7]	117.0	116.8	114.4

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1955, 2,413,278. 1954, 2,384,549. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

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Now—Volume die production brings new manufacturing economy! Leaders in automotive, aircraft and forging industries *profit* from CUSTOM DIE'S *proven* low-cost dies for

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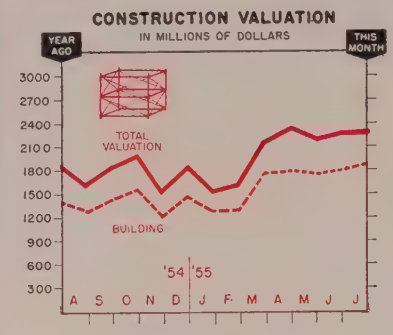
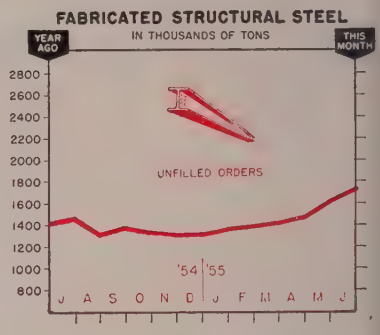




37 States

	Total		Building	
	1955	1954	1955	1954
Jan.	1,504.5	1,151.9	1,255.1	935.6
Feb.	1,581.1	1,221.3	1,278.6	977.5
Mar.	2,134.8	1,527.5	1,748.6	1,199.8
Apr.	2,322.1	1,691.9	1,776.1	1,401.6
May	2,185.1	1,925.3	1,737.1	1,497.6
June	2,255.2	1,733.3	1,793.7	1,376.7
July	2,271.5	1,836.9	1,851.6	1,386.9
Aug.	.....	1,572.9	.....	1,243.3
Sept.	.....	1,816.2	.....	1,424.2
Oct.	.....	1,965.3	.....	1,522.8
Nov.	.....	1,498.9	.....	1,199.8
Dec.	.....	1,828.8	.....	1,463.0
Total	.....	19,770.2	.....	15,628.8

F. W. Dodge Corp.
Charts copyrighted, 1955, STEEL

	Shipments		Backlogs	
	1955	1954	1955	1954
Jan.	225.8	245.6	1,346	1,686
Feb.	213.4	253.1	1,360	1,697
Mar.	227.8	285.4	1,392	1,645
Apr.	239.7	293.5	1,444	1,566
May	223.2	253.9	1,592	1,490
June	282.3	290.3	1,706	1,391
July	....	265.2	....	1,429
Aug.	....	272.5	....	1,270
Sept.	....	265.4	....	1,329
Oct.	....	258.4	....	1,294
Nov.	....	228.7	....	1,280
Dec.	....	223.5	....	1,281
Total	....	3,135.5		

American Institute of Steel Construction

cut; smaller companies may have trouble keeping their heads above water.

Industry isn't sitting back and doing nothing. Further efforts to improve profit margins by increasing productivity are likely. Spending on new plant and equipment should hit $29.4 billion this year, as opposed to $27.9 billion last year. For 1956, preliminary estimates show that it may continue at or above the $29-billion mark.

PAs Preview . . .

Echoing the guarded optimism of this report is the August survey of the National Association of Purchasing Agents.

Production continues high; 85 per cent of the PAs say it's as good or better than that of July. Adding brightness to the picture, 58 per cent say their new orders have increased since June.

Inventories are lower than they were in June, due to a shortage of steel, aluminum and copper and unusually high consumer demand for finished products. On production materials, 43 per cent of the PAs say they are buying 90 days or more into the future. On capital goods, 72 per cent are in this range.

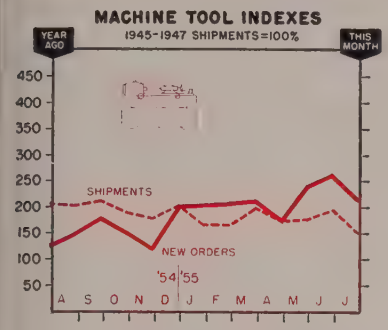
Backing Business . . .

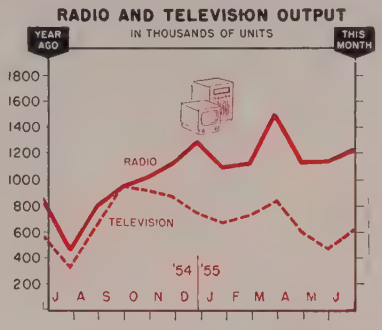
Manufacturers continue to back their confidence in continuing good business with new plans for spending on research and plant. Ford Motor Co.* is scheduling a multi-million dollar research building for completion in 1957. Aetna-Standard Engineering Co., big steel plant equipment maker, reports that it is financing a $1.5-million expansion program and plans to boost its capacity 40 per cent. President E. E. Swartswelter says that the company has a well-diversified order backlog amounting to more than $30 million.

Four Wheel Drive Auto Co. announces that it is back on the profit path after extensive plant modernization. "Engineering emphasis has been placed on interchangeability of components; modernization will continue as rapidly as possible." The company's order backlog is almost double that of 1954.

Revision: Upward . . .

Upward revisions of 1955 business are going on in the machine tool industry. One authority says that orders this year may reach





	New Orders		Shipments	
	1955	1954	1955	1954
Jan.	203.0	173.5	167.3	319.4
Feb.	209.4	159.8	168.2	323.1
Mar.	214.6	169.6	202.5	327.2
Apr.	178.1	142.8	180.1	302.7
May	243.7	139.5	180.9	270.3
June	263.2	185.2	198.8	276.3
July	215.9*	124.7	151.6*	205.7
Aug.	....	147.9	....	203.7
Sept.	....	180.9	....	213.4
Oct.	....	148.9	....	191.0
Nov.	....	119.5	....	179.5
Dec.	....	202.9	....	203.4

*Preliminary
National Machine Tool Builders' Assn.

	Radio		Television	
	1955	1954	1955	1954
Jan.	1,068	872	655	421
Feb.	1,090	769	703	427
Mar.	1,482	940	831	600
Apr.	1,100	745	583	458
May	1,114	722	467	396
June	1,205	838	590	544
July	....	438	...	307
Aug.	....	785	...	633
Sept.	....	932	...	948
Oct.	....	998	..	921
Nov.	....	1,099	...	359
Dec.	....	1,262	...	833
Total	....	10,400	...	7,347

Radio-Electronics-Television Mfrs. Assn.

$800 million, a full $100 million above earlier predictions.

Due to vacation shutdowns, July machine tool shipments were at their low point of the year. New orders also fell off, partly because of seasonal influences. Most of the July order decline is put down to buyers holding off for the machine tool shows.

Air Force contracts amounting to some $50 million are expected to be let this month. This could bring September up to the record for the year. Machine tool backlogs, increased again over the last two months, stand at better than ten months on the average. Business looks strong for machine tools through the first half of 1956.

Associations Report . . .

Industrial heating equipment sales have kept going at a torrid pace through the summer. Carl L. Ipsen, executive vice president of the association, reports that orders for furnaces and control equipment bettered last July's record by almost three times. For 1955, new orders are runing 70 per cent ahead of 1954's.

Investment cast parts also are on the way up. Volume this year is expected to reach $125 million, 60 per cent better than in 1954. Ted Operhall, president of the Investment Casting Institute, says that the jump is due in large part to accelerated procurement of jet engines. Tough alloys and hollow blade designs are well suited to investment casting.

Trends Fore and Aft . . .

Order backlogs are up 60 per cent from 1954's, says ACF Industries Inc. Chairman Charles J. Hardy Jr. notes that steel is so short some plants may have temporary closedowns . . .GM's Harlow H. Curtice says that dieselization saves the railroads some $600 million a year in fuel and maintenance costs alone . . . Commerce department estimates that motor vehicle registrations will reach 61.3 million this year, 81 million by 1965 . . . Dodge has doubled its sales and service organization in the last six months; Plymouth will get separate dealerships . . . Auto replacement parts sales set record for second quarter . . . Factory sales of household vacuum cleaners for first seven months hit highest level since 1950.

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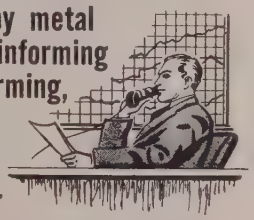

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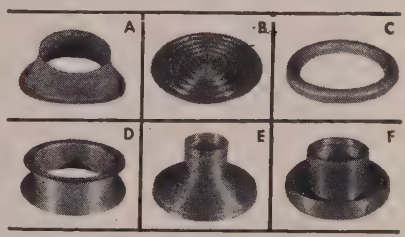
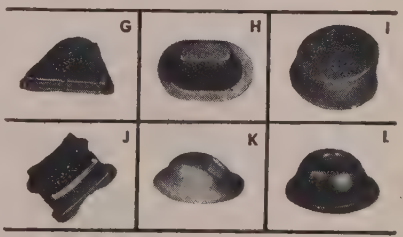


METAL SPINNING AND SPINFORMING:
Typical items: A—Aircraft detail; B—Decorative cover; C—Retainer ring; D—Winding reel; E—Electronic shield; F—Electrical detail.



HYDROFORMING:
Typical items: G—Aircraft detail; H—Spindle cover; I—Aircraft detail; J—Auto bracket; K—Light reflector; L—Air cleaner.

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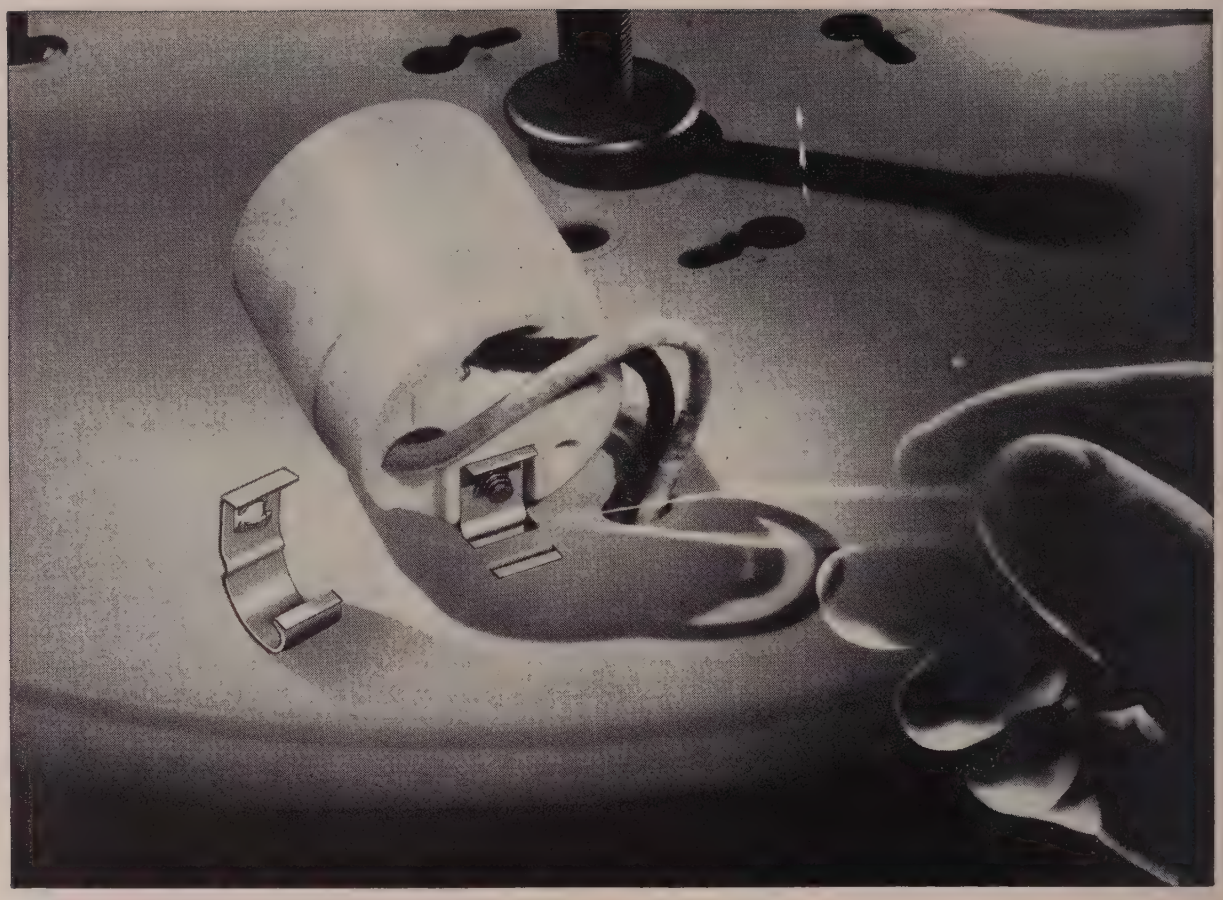

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THIS SPEED NUT® FASTENS WITH ONE MOTION, STAYS TIGHT FOR KEEPS . . . and saves money!

This SPEED NUT developed specially for ceiling lights produced by the Imperial Lighting Products Company, Latrobe, Pennsylvania, gained almost unbelievable savings of 80% in assembly time!

Once fastened to the socket assembly, it snaps into position quickly and easily by hand. No special tools or skills required. And this one-piece, spring-steel SPEED NUT does the job better than the three parts it replaces—a nut, screw and special tapped bracket. Additional savings are possible because there are fewer parts to purchase, stock and handle.

This is a typical example of SPEED NUTS engineered for special fastening applications. Tinnerman develops an average of 4 new SPEED NUTS every day for products of every description. And there are more than 8,000 existing variations to choose from.

A Tinnerman Fastening Analysis Survey can quickly tell you where SPEED NUT brand fasteners belong on your assembly line. Call in your Tinnerman representative soon for full information and write for our Fastening Analysis Service Bulletin No. 336.

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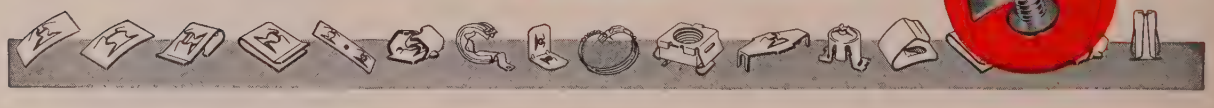


H. J. BUTTNER
. . . *Le Roi Division engineering mgr.*

H. J. Buttner was made manager of engineering, **Le Roi Division,** Westinghouse Air Brake Co., Milwaukee. Formerly contract division manager at Continental Motor Corp., he has been on a project for Army Ordnance the last year.

James A. Johnson, superintendent of the foundry department of **Indiana Steel Products Co.,** Valparaiso, Ind., fills the new position of general superintendent, responsible for operations of the foundry, grinding and special processes departments. He is replaced by **Darrell Davis.**

B. E. Meyer, Chicago district sales manager, fills the new post of general service manager for **E. W. Bliss Co.** He has headquarters in new offices at Canton, O. **Carl J. Theken** was made manager of the die supply division with headquarters in Cleveland and **Edmund M. Brumagin** was made sales manager.

J. Bremner Proctor was made general manager of **Penco Metal Products Division,** Philadelphia, recently acquired by Alan Wood Steel Co. He was executive vice president of De Luxe Metal Furniture Co., a division of Royal Metal Mfg. Co.

Roy A. Allen and **Albert R. Ives** were made joint sales managers of **Rich Steel Co.,** Los Angeles.

JOHN C. CANNON
. . . *Youngstown Sheet & Tube supt.-mills*

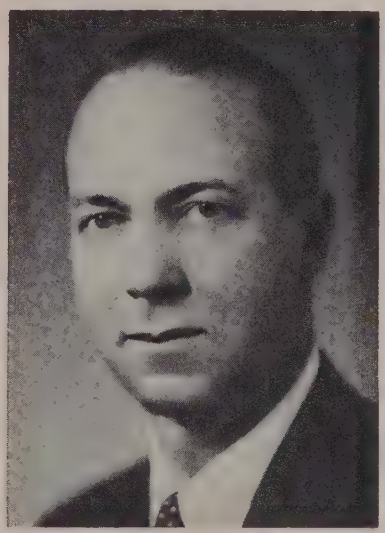
John C. Cannon was made superintendent of tin mills at **Youngstown Sheet & Tube Co.'s** Indiana Harbor Works, East Chicago, Ind. His duties include operations of the cold reduction department in No. 1 tin mill, and the new No. 2 tin mill now under construction and scheduled for operation about August, 1956.

Gordon P. Larson, for six years director of the Los Angeles air pollution control district, was elected vice president of **Oxy-Catalyst Inc.,** Wayne, Pa.

Nathaniel R. Kidder was elected vice president and director of marketing operations by **Technical Marketing Associates Inc.,** Concord, Mass. He was manager, market research and sales analysis division, Jones & Lamson Machine Tool Co.

Arthur H. Ringholm was made manager of railroad sales for **Kaiser Aluminum & Chemical Sales Inc.,** with headquarters in Chicago. **Hobart E. Nichols** was made manager of the firm's new sales office at Hartford, Conn.

Robert N. Lynch was made general sales manager of **Park Chemical Co.,** Detroit. **Charles R. Foreman** was made sales manager, industrial division, and **James L. Hagen** was named manager of the special products division.



J. NALL CANDLER
. . . *Morse Chain v. p.-Detroit manager*

J. Nall Candler was elected vice president and made manager of the Detroit plant of **Morse Chain Co.,** a unit of Borg-Warner Corp. He succeeds **M. V. Durkin,** retired. Mr. Candler, since 1950, has been vice president and assistant general manager.

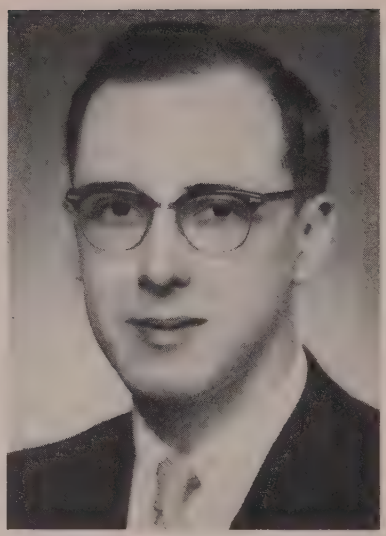
Universal-Cyclops Steel Corp., Bridgeville, Pa., appointed **Peter C. Rossin** research associate. He will be responsible for the company's vacuum melting pilot plant operations.

Stephen Pohlhammer was elected president of **Northwest Tool & Engineering Co.** and **Wisconsin Drill Head Co.,** both of Milwaukee. He succeeds the late **Henry O. Schultz. James E. Schultz** was named secretary-treasurer of the two firms.

Continental Gin Co., Birmingham, elected **Robert S. Lynch** chairman of the board to succeed **George W. Woodruff,** named chairman of the executive committee. Mr. Lynch, president of Atlantic Steel Co., continues in that capacity. **A. L. Smith** was named honorary chairman of the board after serving for many years as vice president, president and vice chairman of the board.

Administration of the mason departments at the Canton, O., and Massillon, O., steel plants of **Re-**

ALAN D. KATTELLE



JOSEPH R. VOGAN

. . . American Brake Shoe purchasing positions

public Steel Corp. have been combined under superintendent **Clarence G. Poth.**

American Brake Shoe Co., New York, appointed **Alan D. Kattelle** assistant general purchasing agent and **Joseph R. Vogan** purchasing agent for steel products. Mr. Kattelle was purchasing agent for equipment and construction; Mr. Vogan, a buyer in the purchasing department.

Ira Tomlinson was elected president and chairman of **Harkins-Wallace Co. Inc.**, San Diego, Calif.

I. E. Siefen was elected president, **J. J. Siefen Co.**, Detroit. He succeeds **John F. Siefen**, resigned. **Arthur W. Sempliner** was made vice president; **J. Boatman**, secretary; and **C. A. DeGroat**, treasurer and general manager.

David H. Brown, director of engineering and research, was appointed assistant general manager-operations at **New Process Gear Corp.**, Syracuse, N. Y.

Walter Gibbs was made purchasing agent at **Michigan Chemical Corp.**, St. Louis, Mich.

Herbert Schwartz was made president and sales manager of **Technion Design & Mfg. Co. Inc.**, New York. He was sales manager of American Silver Co.

Grover C. Arnwine and **James V. Fairley** were appointed assistant sales managers of **Alabama By-Products Corp.**, Birmingham.

Gilbert A. Bunn, manager of the Detroit division of **Kennametal Inc.**, Latrobe, Pa., was placed on special management assignments at the home office, Latrobe, Pa.

David C. Wycoff fills the new position of manager, product adaptation department, **Clark Controller Co.**, Cleveland.

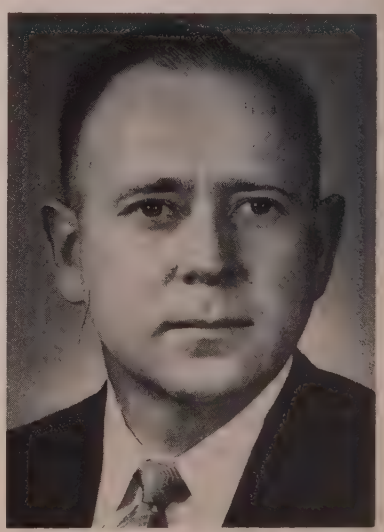
Ford Motor Co. appointed **Edward J. Hollenbeck** manager of its Livonia, Mich., automatic transmission plant to succeed **John A. Swint**, now manager of plant operations in the Cincinnati area. Mr. Hollenbeck was production programming and control manager at the Livonia plant. Mr. Swint succeeds **John B. Lawson**, recently named assistant general manager of the aircraft engine division in Chicago.

Gwilym A. Price, president of **Westinghouse Electric Corp.**, Pittsburgh, since 1946, was elected chairman and president. He continues as chief executive officer, a responsibility he carried throughout his term as president. The board chairmanship has not been occupied since 1951. **Mark W. Cresap Jr.** was elected executive vice president and deputy chief executive officer, and also was elected to the board of directors and to the executive committee. **Latham E. Osborne** was elected vice chairman of the board. **John K. Hodnette**, former vice president in charge of the apparatus products divisions, was elected vice president-general manager, responsible for operations of the company's product groups. He also was elected to the board. Mr. Hodnette is succeeded by **A. C. Monteith**, former vice president-engineering and research. **Dr. John A. Hutcheson** succeeds Mr. Monteith.

Richard T. Crumley was named sales manager of **Toledo Porcelain Enamel Products Co.**, Toledo, O.

Edward G. Nikoden was named

EDWARD J. HOLLENBECK



JOHN A. SWINT

. . . appointments for Ford's automatic transmission division

BASEMENT BARGAIN for Paint Finishing

NOW PD ENGINEERING— CONSERVES floor space... UTILIZES basement areas for disposition of paint laden air . . . RETURNS washed and filtered air.

This new installation of a Peters-Dalton Hydro-Whirl Finishing System in the plant of a major manufacturer of milling machines has overcome many serious problems. In this case, dirty, inefficient, and dangerous conditions otherwise thought insoluble have been overcome. The machines made here are of huge size (castings weighing up to 90,000 lbs.) and handling operations must necessarily be held to a minimum. Complete finishing operations now can be carried on by any number of men — working on all sides of the machines — in unpolluted air. The Finishing System engineered and built by Peters-Dalton permits the placing of these machines in a room fitted with floor gratings. The paint laden air (over 150,000 CFM) is drawn down through these gratings to a lower level and thence through the P-D washer sections, where it is "knocked down" by the Hydro-Whirl scrubbing action which returns it washed and filtered to the finishing room. It is a finishing system that not only solves the problems of a particular manufacturer but is so excellent that it meets insurance company standards and code requirements of most states for the return of cleansed air to a room.

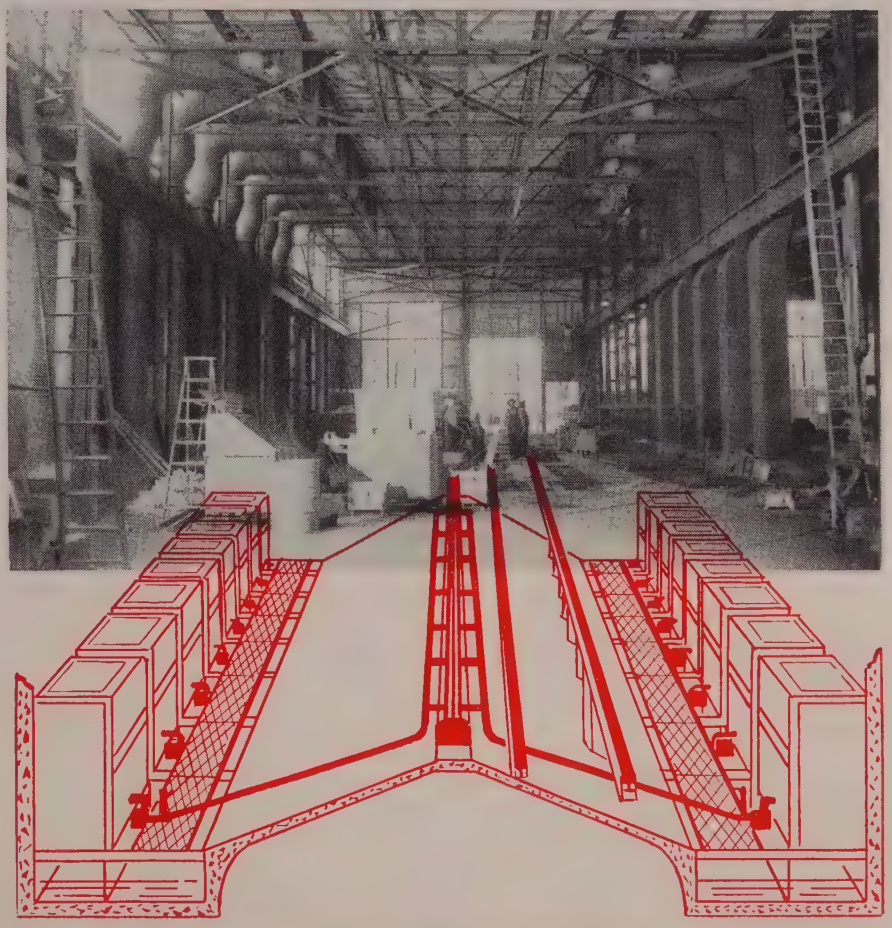


Photo (while under construction) and Drawing of P-D Finishing System above illustrate (1) the complete freedom of movement without loss of any floor space, and (2) the elimination of expenditure for air make-up because of cleansed air-return feature of this installation.

Finishing Systems by Peters-Dalton are designed for the job — to do the job. Whatever your needs . . . from cabinet size to installations comparable to the one illustrated here . . . depend upon P-D designing and engineering. If you want to modernize, economize, increase production and efficiency, we'll be glad to tell you more. Just write, wire or phone.

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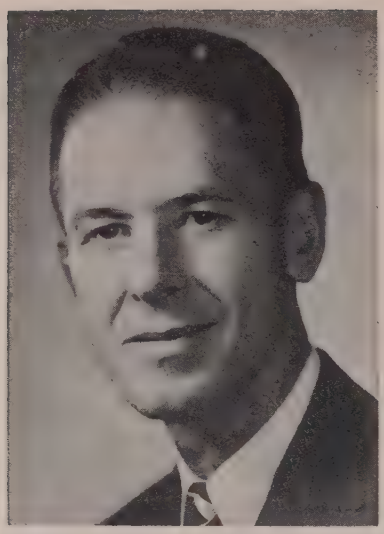
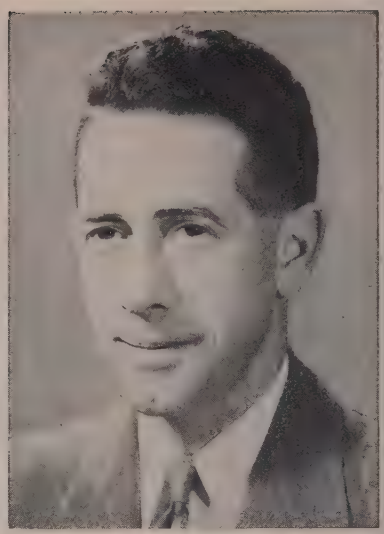


CHARLES F. SAWYER
. . . Vanadium's Latrobe mill works mgr.

W. DALE KIMMELL
. . . Standard Products purchasing dir.



JOHN R. CURRAN
. . . vice president of Hammel-Dahl

sales manager, industrial division, **Parker Sweeper Co.**, Springfield, O.

Charles F. Sawyer was made works manager of **Vanadium-Alloys Steel Co.'s** Latrobe, Pa., mill to replace **Frank Moberg**, retired. Mr. Sawyer was plant metallurgist for the last nine years. He is now in charge of production.

William J. McBride was made assistant general superintendent, **Green River Steel Corp.**, Owensboro, Ky. He was assistant superintendent of rolling mills.

Charles A. Maloney Jr. joins Robertshaw-Fulton Controls Co. as government and subcontract sales administrator of the **Fielden Instrument Division**, Philadelphia.

Black & Decker Mfg. Co., Towson, Md., created two sales divisions. **Albert S. Fehsenfeld**, former assistant general sales manager, heads the wholesale division. **Arthur S. Boehm** heads the industrial-automotive division. Mr. Boehm is replaced by **John P. Spain** as Pacific Coast district sales manager at San Francisco. Mr. Spain was Baltimore branch manager.

W. Dale Kimmell was made director of purchases for **Standard Products Co.**, Cleveland. He will supervise and co-ordinate purchasing at the firm's six manufacturing divisions. As corporation purchasing agent, he has been in charge of steel purchases for many years.

Bob Daniels was promoted from sales manager to assistant manager of **Garrett Supply Co.**, Los Angeles, a division of Garrett Corp.

Alton G. Wirick was made manager of manufacturing for the commercial refrigeration division of **Servel Inc.**, Evansville, Ind.

R. Earl Miller was named to the new position of administrative assistant to the vice president-operations at **Colorado Fuel & Iron Corp.**, Pueblo, Colo.

John W. Shier was made assistant general manager, **Acheson Colloids Co.**, Port Huron, Mich. He is replaced as production manager by **Bart C. Dickey.**

Frank A. Sullivan was made sales manager, **Wheeler Reflector Co.**, Boston.

Hammel-Dahl Co., Providence, R. I., elected **John R. Curran** vice president. He was director of engineering.

Kenneth O. Hoevel succeeds **Denzel G. Mann**, retired, as Midwest division manager, **National Supply Co.** He has headquarters in Tulsa. Okla.

A. M. McMillan was made assistant manager of production of **Wheeling Steel Corp.**, Wheeling. W. Va.

Clinton F. Ivins Jr. was made assistant manager of electrical sales at **Hanson-Van Winkle-Munning Co.**, Matawan, N. J.

Frank L. Condit was made St. Louis branch sales manager for Republic Steel Corp.'s **Berger Division.**

Alois B. Essex was appointed administrative engineer of **Ford Instrument Co.**, division of Sperry Rand Corp., Long Island City, N. Y.

Eric H. Church fills the new post of operations manager-engineering and production at **Lighting Products Inc.**, Highland Park, Ill.

OBITUARIES . . .

William U. Cigliano, 56, vice president and a director, **Russell, Burdsall & Ward Bolt & Nut Co.**, Port Chester, N. Y., died Aug. 26.

Michael P. Cortilet, 59, vice president in charge of **American Can Co.'s** central division at Chicago, died Aug. 27.

Ernest H. Webb, 79, retired president of **Webb Wire Works**, New Brunswick, N. J., died Aug. 18.

Fielding Simmons Jr., 40, Nashua, N. H., plant manager, **Sprague Electric Co.**, died Aug. 22.

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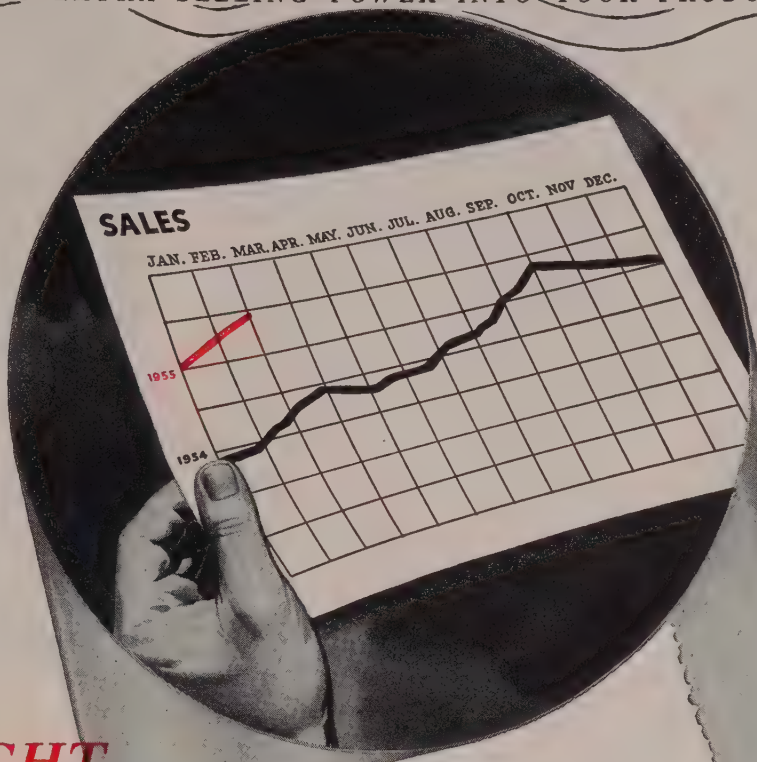

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Strip steel—hot or cold rolled—precisely exact to *your* specifications is an ALAN WOOD specialty. This specialty . . . and our long-established principle of "custom-producing" under the highest standards known . . . ensures you of the "right" strip for your products. In turn, this "rightness" means fewer production headaches . . . and consistent, durable quality which helps build your product's reputation and sales.

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Plates (sheared)
Hot rolled sheets
Hot rolled strip
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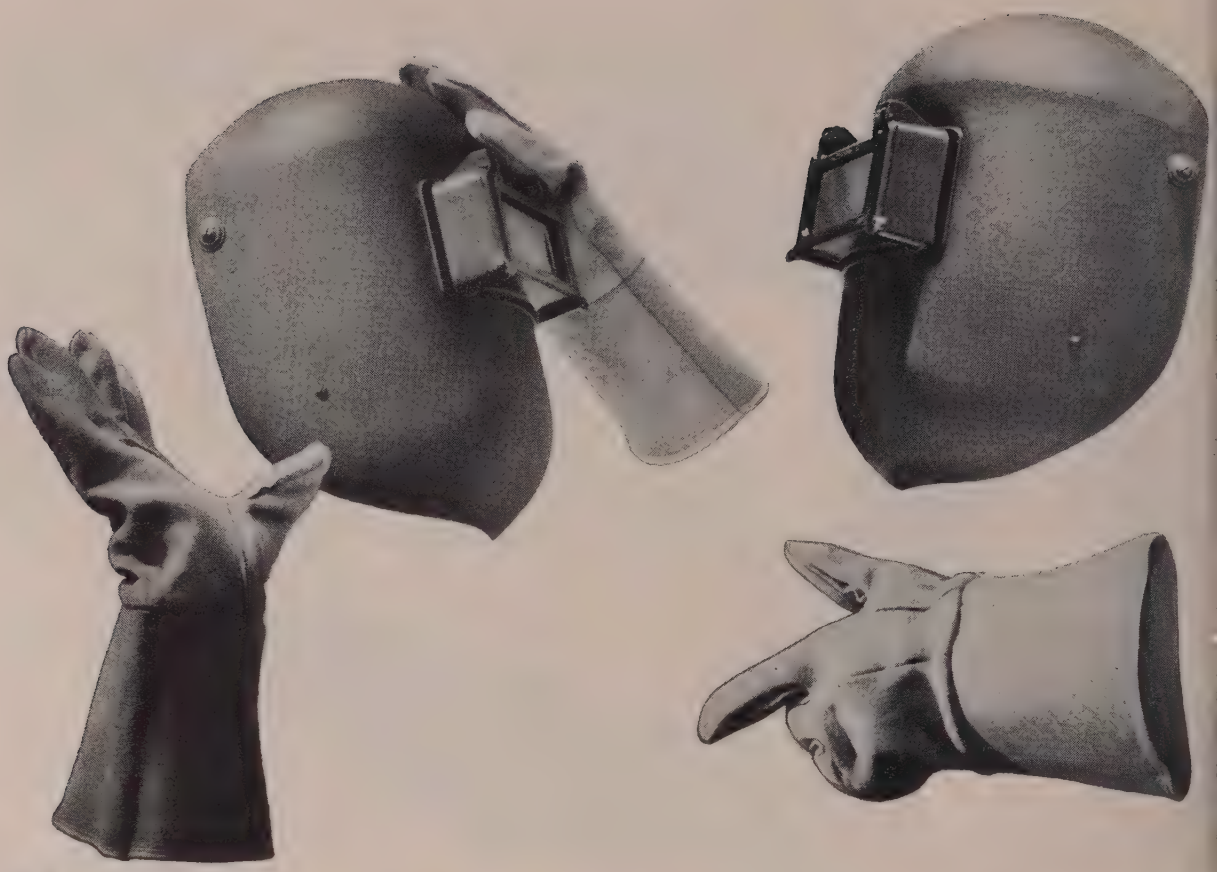

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That's right. 3 times stronger than carbon steel, Lukens "T-1" steel can be welded without preheating or special joint design.

Although Lukens "T-1" steel is a tough, high strength, heat treated steel, equipment builders will find that the techniques of working with this new steel are no different than with carbon steel. Recognizing that higher strength steels require higher pressures to form, proper design procedures will permit this low carbon, quenched and tempered alloy plate steel to be fabricated not only in the shop but also in the field. Those items of equipment which may not have to be stress relieved for dimensional stability or other special reasons can be fabricated of Lukens "T-1" steel to take advantage of its tough "as-welded" characteristics.

In addition to easy fabrication, Lukens "T-1" steel has other benefits of equal value to equipment builders. Three times stronger than carbon steel, this new steel has lighter weight and reduced thickness in comparison to heavier, thicker plates of carbon steel, thereby reducing material, fabrication and shipping costs. Lukens "T-1" steel's excellent resistance to the combination of wear and impact abuse lowers maintenance and replacement costs, lengthens equipment life. Lukens' range of steel plate sizes—including the widest and heaviest plates available anywhere—makes possible additional savings for builders through the use of wider plates that require fewer welded seams.

A new addition to Lukens' complete line of carbon, alloy and clad steels, this new steel's unusual combination of properties suit it especially to applications in pressure vessels, bridges, shipbuilding, construction machinery and general industrial equipment. On problems of design, material selection, application and fabrication techniques, Lukens offers full technical assistance. If you would like further information on Lukens "T-1" steel, write for Bulletin 765. Address: Manager, Marketing Service, 773 Lukens Building, Lukens Steel Company, Coatesville, Pa.

LUKENS

"T-1" STEEL

THE NEWEST IN A COMPLETE LINE OF ALLOY STEELS

LUKENS STEEL COMPANY, COATESVILLE, PENNSYLVANIA

Weirton Opens Mill

Rebuilt 54-in. hot mill has a rated capacity of 2.7 million tons of strip per year

STEEL is being rolled in the completely rebuilt 54-in. hot mill at the strip steel department of Weirton Steel Co., division of National Steel Corp. It's part of National Steel's multimillion expansion program.

The mill, on which construction was started about eight months ago, has a rated capacity of 225,000 tons per month, or 2.7 million tons per year. It has a delivery speed of 2400 fpm, is nearly 1500 ft long and has a 426-ft runout table.

The hot mill consists of three slab-handling furnaces and five stands of a roughing train, replacing four furnaces and four roughing stands.

Scrap Loss Cut—The roughing train will handle steel slabs 26 ft long, 48 in. wide and 7½-in. thick, with a 30,000-lb maximum weight. It reduces the slabs to ¾-in. thickness. The old roughing train handled slabs 13 ft long, 48 in. wide and 5½-in. thick, with a 6000-lb maximum weight, and reduced them to 1 in. thickness. The new rougher can make a coil of steel five times larger than the old mill did, resulting in reduction of scrap loss in trimming coil ends.

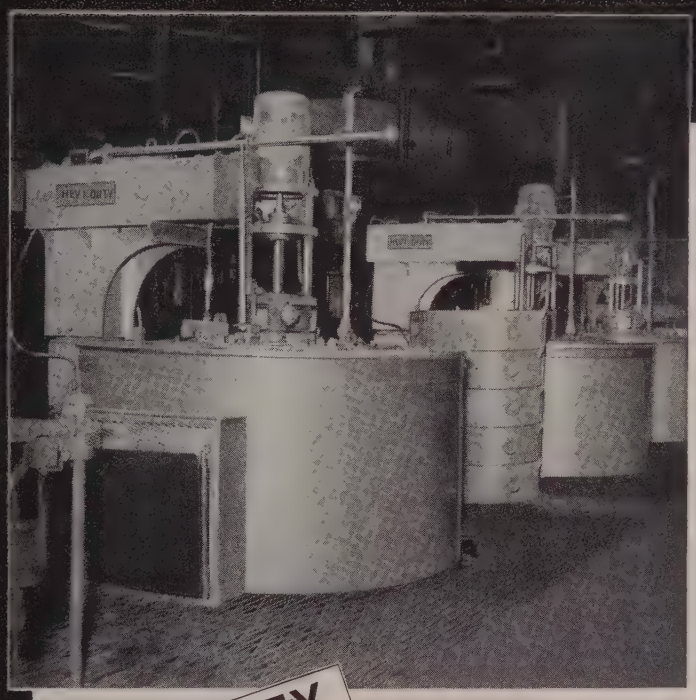
The 2-high Nos. 1, 2 and 3 roughing stands have 44-in. diameter rolls, while the Nos. 4 and 5 stands are 4-high with 35-in. work rolls and 49-in. back-up rolls. In the old roughing train, which was removed, No. 1 rougher was 2-high, with a 32-in. work roll; the other three were 4-high with 19-in. diameter work rolls and 49-in. back-up rolls.

Big Furnaces—Each of the furnaces is rated at 200 tons per hour. The old No. 1 furnace was rated at 100 tons per hour, while Nos. 2, 3 and 4 were each rated at 60 tons per hour. For many years, the No. 1 was the largest re-heating furnace in the world.

In the new mill, slabs leaving the furnaces go through the roughing train, then onto an approach table which crosses the

(*Please turn to page* 72)

FEDERAL BEARINGS CO. has
ACCURATE
Carbon CONTROL



WITH A
HEVI DUTY ®
Vertical Retort
Furnace

Federal Bearings Company of Poughkeepsie, New York accurately controls the carburizing of certain bearing races in a Hevi Duty Furnace.

Multiple Zone Control of radiant type heating elements assures even heat distribution from top to bottom of the load.

Forced Circulation assures that the carburizing atmosphere reaches all surfaces of even the most dense loads.

You, too, can produce consistently uniform results if you specify Hevi Duty Vertical Retort Furnaces for Carburizing, Nitriding, Dry Cyaniding and Bright Annealing.

Write for Bulletin HD-646.

HEVI DUTY ELECTRIC COMPANY
HEAT TREATING FURNACES HEVI DUTY ELECTRIC EXCLUSIVELY
DRY TYPE TRANSFORMERS — CONSTANT CURRENT REGULATORS
MILWAUKEE 1, WISCONSIN

PRIME MOVER. Here a wire belt is conveying pottery from a baking kiln to the decorating department. Wire belts, woven from CF&I-Wickwire Wire, are used to convey everything from heavy metal parts to fluffy foam rubber during processing operations.

CF&I-WICKWIRE MAKES WIRE FOR THOUSANDS OF USES

SHELF HELP for the housewife. These dish-washer shelves are made of selected low carbo rods of CF&I-Wickwire Refrigerator Shelf Wire. Specifications call for an extra-clea smooth, bright surface for plating.

from making dishes for the manufacturer to washing them for the housewife... nothing can take the place of wire!

Wire can answer an almost incredible variety of needs because it can be varied to provide thousands of different combinations of mechanical and physical properties. From wire that can be easily twisted by hand to a rigid, self-supporting wire, it can be "tailor-made" to meet almost any set of requirements.

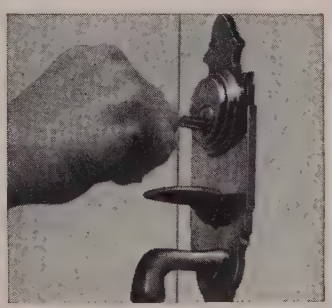
Whatever you assemble, manufacture, or process, let CF&I-Wickwire Wire help you do the job better, cheaper, and faster. You'll like doing business with CF&I-WICKWIRE and the careful attention given your own particular requirements.

CF&I-Wickwire Wire is made in plants conveniently located throughout the nation, from coast to coast. For detailed information, write our nearest district sales office.

WINDOW DRESSING. All kinds of draperies are hung on rods by means of strong, inexpensive drapery pins made from CF&I-Wickwire Drapery Pin Wire.

"RIBS" FOR HOSE. The rubber hose in grease guns is strengthened by basket-weave braided CF&I-Wickwire Hose Reinforcement Wire to help withstand high internal pressures. This wire is also used for rubber hoses in hydraulic brake lines and in hydraulic lines for aircraft.

FOR BACKYARD EXERCISE. These rake teeth are made of CF&I-Wickwire Rake Tine Steel Wire (flat scaleless tempered Spring Steel Wire).



ALL SECURE. The spring used in this lockset is made from extra-tough CF&I-Wickwire Lock Spring Steel Wire to insure long, dependable life.

3144

CF&I-WICKWIRE WIRE

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver
El Paso • Ft. Worth • Houston • Lincoln (Neb.) • Oklahoma City • Phoenix • Pueblo • Salt Lake City • Wichita
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WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia

Look Overhead . . . see "NORTHERN"

For heavy, continuous service in steel storage yards

The 40-ton, 75-foot span, heavy duty crane shown above is typical of many similar NORTHERN CRANE installations in steel mills, fabricating plants, and similar plants in heavy industry.

NORTHERN mill type cranes are designed and built to meet the most exacting requirements, providing for continuous service, maximum loads, and high impact allowances. Mill type motors and control equipment provide highest electrical performance.

NORTHERN CRANES are the result of over 55 years' experience in the design of overhead electric traveling cranes, heavy duty electric hoists and other materials handling equipment.

Let us send you our latest bulletins

NORTHERN MATERIALS HANDLING EQUIPMENT

NORTHERN ENGINEERING WORKS
210 CHENE ST., DETROIT 7, MICH.

(*Concluded from page 69*)

area where the roughing train for the old mill was located. After passing through an upcut shear, which trims off the front end of the bar, the steel enters the finishing train.

More Power, Speed—The new finishing train consists of six stands of 26.25 and 49 x 54-in. mills, and its power and speed have been increased to handle the steel from the enlarged roughing mill. Three new mandrel-type coilers will replace the two existing basket-type coilers at the end of the runout table.

With the passing of the old roughing stands, the steel industry loses its only hot-mill turnover tables. They were designed at Weirton in 1927 to knock off loose scale, since only light water pressure was available at the time. This caused a slow-up in the mill's continuous operation. Today, new hydraulic pumps enable water pressure to reach more than 1200 lb, enough to effectively remove the scale.

George Harmuth is strip steel manager; Earl D. James is manager of the 54-in. strip steel department.

Wire Firm Expanding

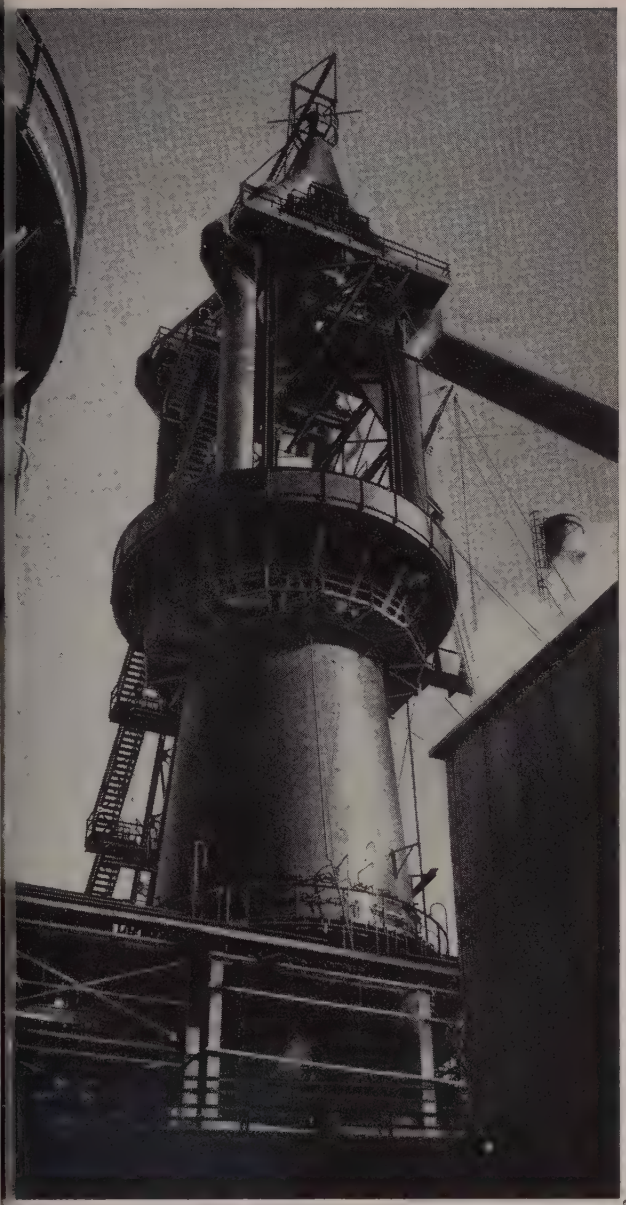
Maryland Fine & Specialty Wire Co., Cockeysville, Md., is erecting a 7500-sq-ft addition to be used primarily for storage. Present storage space will be equipped for expanding manufacturing operations.

Perfect Circle Buys Foundry

Perfect Circle Corp., Hagerstown, Ind., bought Dill Inc.'s foundry, Rushville, Ind., to make piston ring castings. The foundry had been shut down for several years.

Copperweld Plans Program

Copperweld Steel Co., Pittsburgh, plans to increase its authorized stock to cover a proposed $10-million improvement program, which includes a 50 per cent boost in its Steel Division, Warren, O. The program calls for replacement of existing facilities, rather than expansion, says C. Walter Holm-



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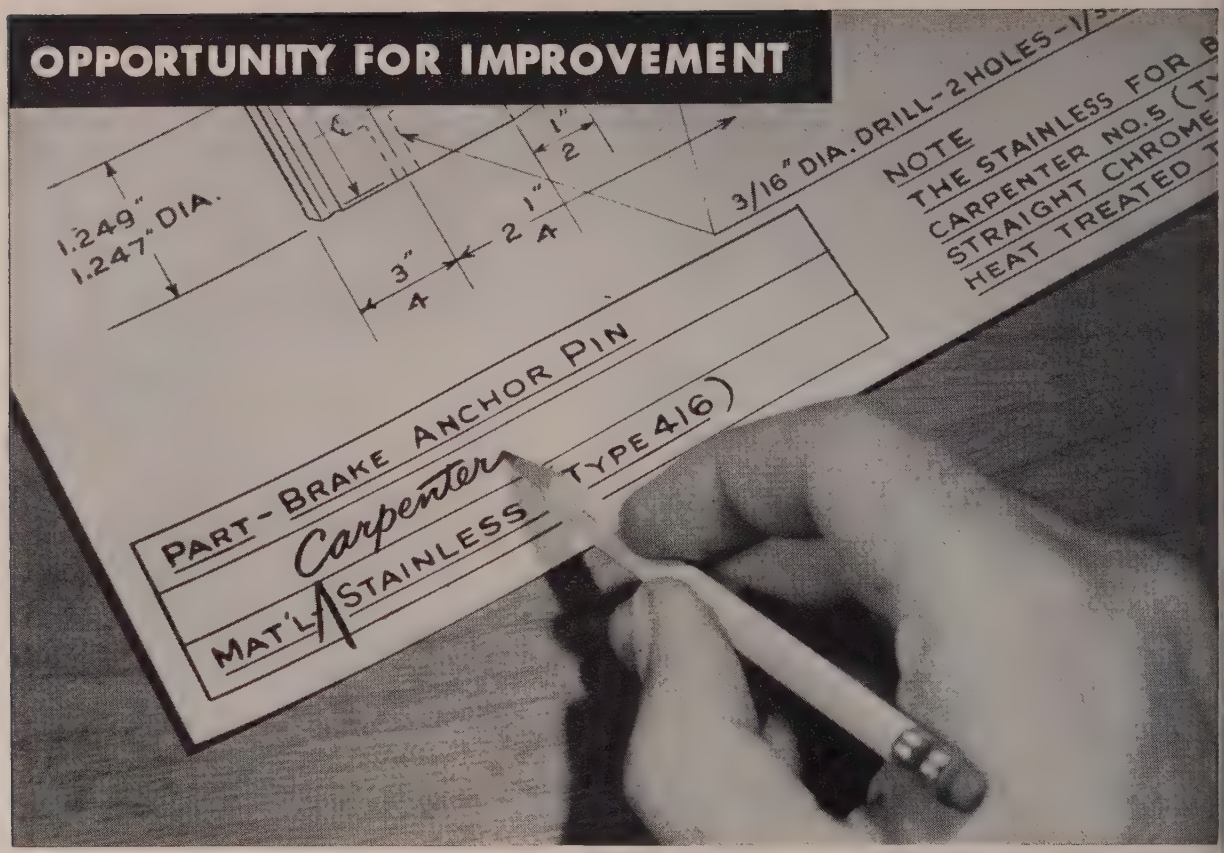


one move . . . can open new horizons for you!

DO YOU HAVE "A Guide to Specialty Steels as Made by Carpenter"?

It is designed to give you a quick summary of the products Carpenter supplies to industry. Because of the high standards to which these steels are made, you may find new ways to cut costs, increase production or improve your own products.

For your copy, contact your Carpenter representative, or drop us a line on your company letterhead. No obligation, of course.

Ever since Carpenter developed the first free-machining stainless, industry has applied Carpenter Stainless in its search for new opportunities for improvement.

One example is a new freedom from corrosion problems . . . made possible by the development of Carpenter No. 20, a hot sulphuric acid resisting stainless steel. Another is the economical, mass-production of severely cold headed chrome-nickel parts with Carpenter-pioneered Stainless No. 10.

Still another is found in industry's search for more dependable steels to meet the demands of high temperature applications. In this field of super alloys, too, Carpenter is producing heat resisting alloys to established standards of Carpenter quality.

And consider this: Carpenter quality is safeguarded by one of the largest staffs of skilled metallurgists, per pound of steel produced, in the industry. Discover how you can explore new horizons of product and production improvements today . . . by moving to Carpenter.

Carpenter STEEL

Corrosion and Heat Resisting Steels

THE CARPENTER STEEL CO., 139 W. Bern St., Reading, Pa.
Export Department: The Carpenter Steel Co., Port Washington, N.Y.—"CARSTEELCO"

st, executive vice president. e company recently installed a 0,000 55-ton electric furnace l is expanding facilities at the lt shop.

ystone Steel To Expand

Keystone Steel & Wire Co. is nching a $10-million improve- nt and expansion program. Ex- ding over two years, the pro- t eventually will increase the nifinished steel capacity of the m's Peoria, Ill., plants by at st 50 per cent, says R. E. Som- r, president.

Wire mill capacities will be in- ased to meet demand; rolling ll capacity will be doubled; and e capacity of the four open- rth furnaces will be enlarged.

The installation of rolling mill ilities will take at least 18 nths. Meanwhile, other facili- s will be improved and enlarged bring them into balance.

Build Factory and Foundry

A $1-million factory and foundry l be built at Blue Island, Ill., by & W Electric Specialty Co. and affiliate, Manufacturers Brass undry Co., Chicago. The factory l contain 120,000 sq ft; the ndry, 20,000 sq ft, with about e same capacity for melting ass, bronze and aluminum.

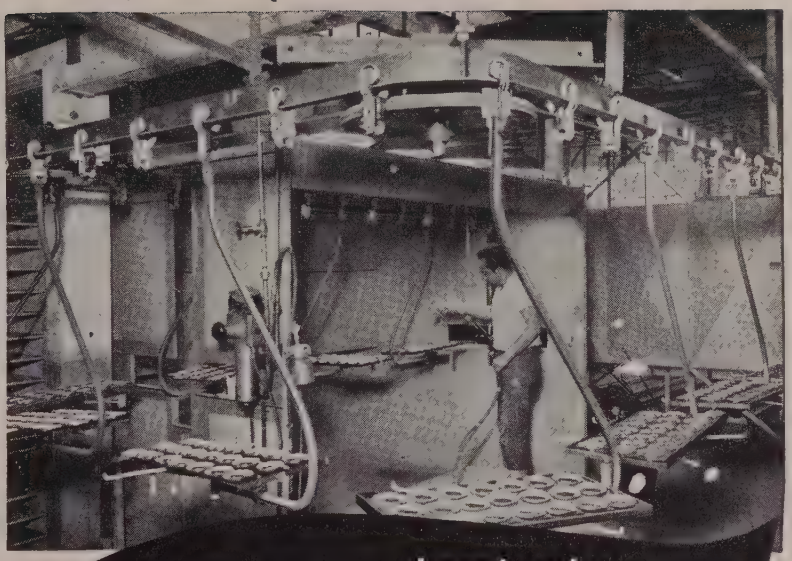
public To Buy Diesels

Republic Steel Corp. is dieselizing railroad operations at its veland steel plant. Fifteen sels are in use. Eleven new es will replace 14 steam locomo- es. Hauling operations will n in efficiency, and replacement the locomotives will make a stantial contribution to cleaner in Cleveland's industrial valley.

me Aluminum Expanding

Acme Aluminum Alloys Inc., yton, O., is undertaking a $500,- expansion and renovation pro- m. It will convert what is pri- rily a foundry operation to the nufacture of tools, dies and cial machinery. Operations will consolidated into one building. ch of the expenditure will be

(*Please turn to page* 78)



LOWER INITIAL COST — Buschman "Universal" Cable Conveyors not only cost less but also outperform heavier, more expensive conveyors for light and medium-weight applications.

LOWEST MAINTENANCE COST — Constant take-up readjustment is eliminated because of a safety factor of 14-to-1 or greater.

LOWEST REARRANGEMENT COST — Exclusive Buschman design plus lightweight all-bolted construction make future changes fast and easy.

MORE COMPACT DESIGN — Shorter radius curves and dips permit more complete utilization of production and storage space . . . both overhead and at work level . . . require less room inside industrial ovens, washers, dip tanks, etc.

SMOOTHER OPERATION — There are no pulsations or jerks to damage delicate parts or finishes when your product is handled on Buschman Cable Conveyors.

PRE-ENGINEERED — Using Buschman standard stocked parts, your own crew can set up a "Universal" Cable Conveyor tailored to your specific requirements.

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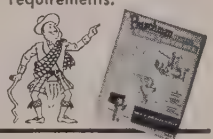

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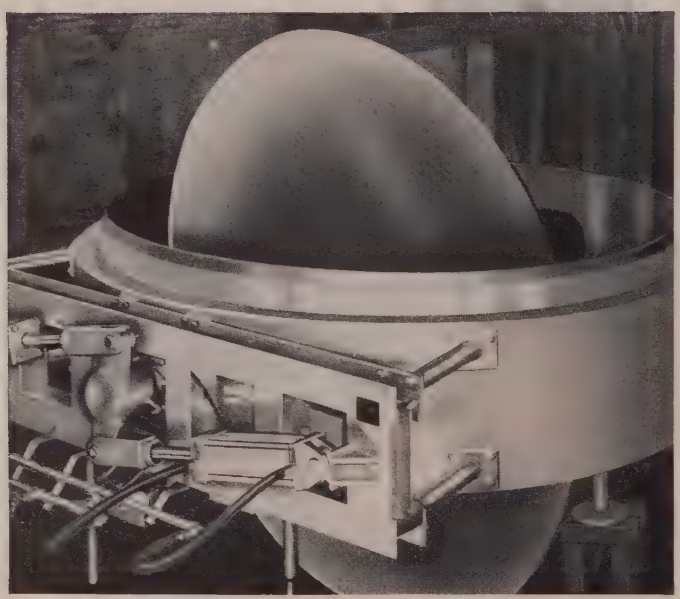
Representatives in Principal Cities
Complete Conveyor Systems For All Types of Industries • Engineered • Manufactured • Installed



Completed valve is ready for shipment to an Air Force wind tunnel. ENDURO Stainless Steel is used for the seal band which is welded to the inside of the valve body. The manufacturer, Henry Pratt Company, Chicago, also makes a chemical valve fabricated entirely from ENDURO to resist corrosion.

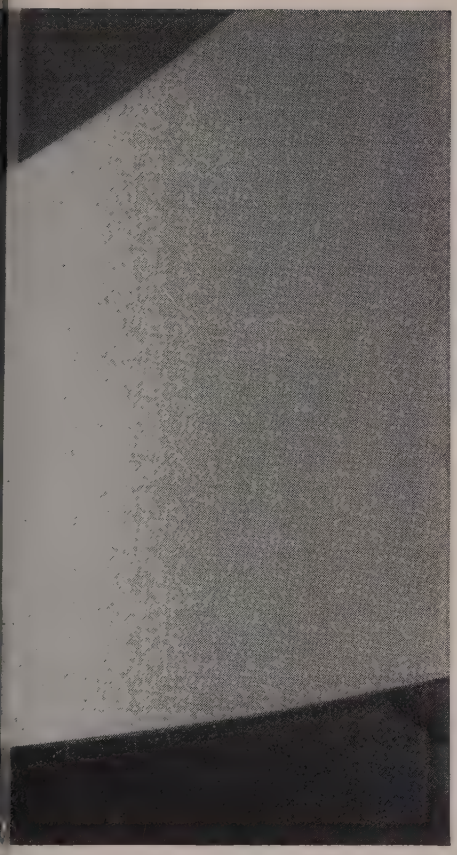
ENDURO..
seal in 14-foo

This stressed-seal butterfly valve was mad by the Henry Pratt Company, Chicago, fo an Air Force wind tunnel. The valve em ploys an inflatable metal seal band whic "inflates" against the disc edge and pro vides a tight shutoff when pressure is a plied. It was designed for operation und static pressure conditions ranging from 0 to 50 psia and a temperature range fro −10°F. to +250°F.

To meet these operating conditions an to combat corrosion, ENDURO Stainle Steel, Type 301, is used for the seal ban The company prefers ENDURO because its workability and machinability. Com pared to other materials previously use machining and welding time were cut

REPUBLIC

World's Widest Range of Standar



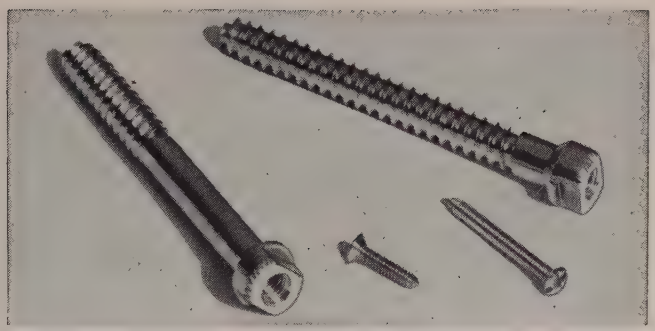
rovides positive utterfly valve

ss than half.

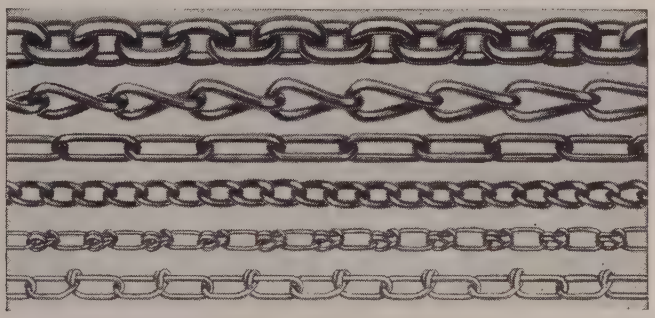
Ease of fabrication and stubborn resist- ce to heat, pressure, corrosion and rust e only some of the features of ENDURO. provides strength without prohibitive eight and bulk. It's easy to clean. ENDURO solid stainless steel with no applied sur- ce to chip, crack or peel. It is tough, strong id durable—resists denting and abrasion. Republic's exclusive "Three-Dimensional etallurgical Service" is ready to help you ply ENDURO's bonus benefits to your oduct or process. ENDURO is available rough your Republic distributor in many rms—sheets, strip, hot rolled and cold ished bars, wire and tubing.

STEEL

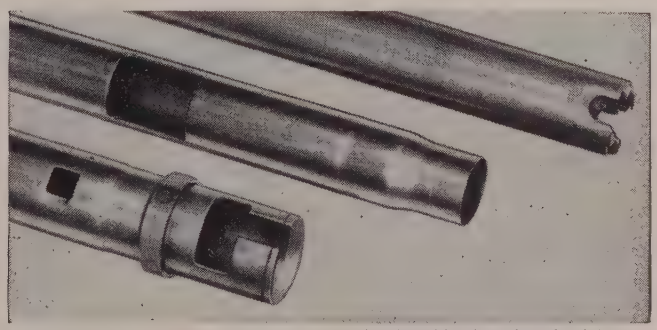
Steels and Steel Products



HERE'S MORE PROOF OF THE MACHINABILITY OF REPUBLIC TITANIUM. These bone screws were made from Republic Titanium Alloy by The Collison Surgical Engineering Co., Baltimore, Md. Machining operations included cutting off, milling, drilling, tapping, threading and buffing. Titanium is used for surgical parts and instruments because it is strong, lightweight and absolutely inert. Republic will help you use all its advantages profitably.



FOR HOISTING, HOLDING, HAULING, TOWING, BUNDLING, you can count on Republic Chain for greatest safety and dependability. Republic's Round Chain Division makes a complete line of welded and weldless chain for every industrial requirement—every type of fitting, attachment and accessory. Strategic location of Republic Chain plants and warehouses assures you of prompt delivery.



YOU CAN SAVE ON TUBULAR PARTS LIKE THESE when Republic does the tube fabricating. Republic's Steel and Tubes Division is equipped to handle all kinds of tough fabricating jobs—has the machinery, the experience and the ability to work out the most economical method of making quality tubular parts. And that includes complete assemblies. Call in Republic to quote when you want to keep fabricating costs down.

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SILENT HOIST
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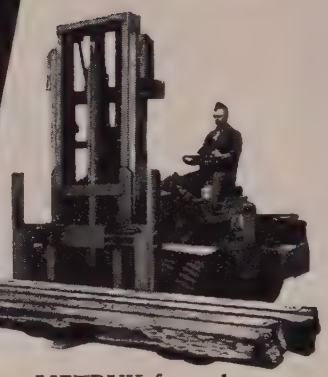
"DAY-BY-DAY
EARN-ITS-WAY
PLAN"

3-5-7½-10-15 ton
CAPACITIES



If you can reasonably use a Heavy Duty LIFTRUK for at least two hours a day average, to improve the movement of goods in process or reduce materials handling operations, then you should be interested in this unusual "rent-or-pay-as-you-use" plan. Proper cost accounting methods often show that man-hours saved, storage space gained, or time in transit reduced, add up to a profit well above the payments required for LIFTRUK for purchase or rental charges.

Exclusive FLUID DRIVE

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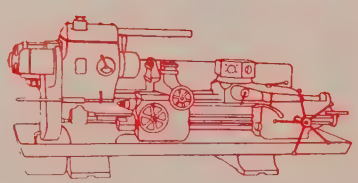
REBUILD AND
MODERNIZE
YOUR
TURRET LATHES

Investigate the important production, maintenance and tax savings of SIMMONS ENGINEERED REBUILDING for your: Lathes, Planers, Surface Grinders, Cylindrical Grinders, Vertical Millers, Openside Planers, Automatics, Vertical Boring Mills, Turret Lathes and Radial Drills.

A qualified Simmons rebuilding engineer will discuss it with you. Write, wire or phone today. Simmons Machine Tool Corporation, 1755 North Broadway, Albany 1, N. Y.



Write for Simmons Way... case histories of rebuilding jobs.

SIMMONS GIVES MACHINE TOOLS A NEW LEASE ON LIFE
Unconditional guarantee...our standard since 1910

(*Concluded from page 75*)

for the purchase of new machinery, including large vertical mills to handle major die jobs.

Mattson-Cowley Reorganized

Mattson-Cowley Corp., Pasadena, Calif., electronics firm, has reorganized under the name of Mattson Electronics Corp.

Maryland Firm Plans Expansion

K. Hettleman & Sons Inc., Brooklyn, Md., will erect a 50,000-sq-ft addition to its plant next year. The firm makes brass and bronze ingots. Its subsidiary, Dixie Metals Co., makes babbitt, solder and type metals.

Yale & Towne Opens Branch

Yale & Towne Mfg. Co., Philadelphia, opened a sales and service branch at 4466 Woodward Ave., Detroit. D. K. Wirth is branch manager; J. R. Henderson, sales manager.

Westinghouse To Buy Olsen

Westinghouse Electric Corp., Pittsburgh, will purchase C. A. Olsen Mfg. Co., Elyria, O., subject to approval of Olsen stockholders. The Olsen Co. with its subsidiary, Henry Furnace Co. of Medina, O., makes a broad line of home-heating units.

REPRESENTATIVES

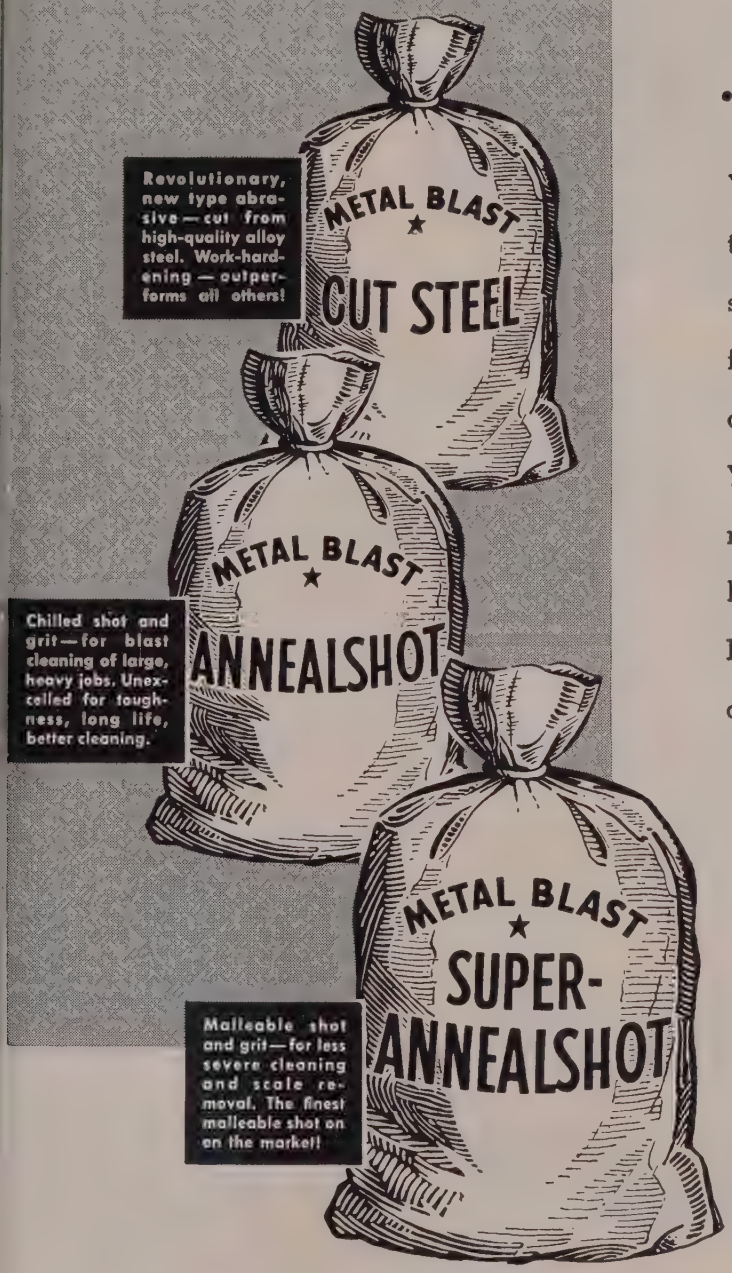
Calumet & Hecla Inc.'s Wolverine Tube Division, Detroit, appointed Gerald S. Feild as its representative in Georgia.

Cleaver-Brooks Co., Milwaukee, appointed Barrett & Yost Co., Seattle, representative for the sale of its boilers and equipment.

Stephens-Adamson Mfg. Co.'s Standard Products Division, Aurora, Ill., appointed the following stocking distributors for its conveyor machinery: J. R. Banbury Equipment Co., Pittsburgh; Southern Chemical Sales Co., Louisville; P. J. Hagerty Equipment Co., Peoria, Ill.; Wisconsin Bearing Co.,

TRY ONE OF THESE THREE

...and SEE!


Revolutionary, new type abrasive — cut from high-quality alloy steel. Work-hardening — outperforms all others!
METAL BLAST
CUT STEEL
Chilled shot and grit — for blast cleaning of large, heavy jobs. Unexcelled for toughness, long life, better cleaning.
METAL BLAST
ANNEALSHOT
Malleable shot and grit — for less severe cleaning and scale removal. The finest malleable shot on the market!
METAL BLAST
SUPER-
ANNEALSHOT

Yes, it's the thing to do! Select the METAL BLAST abrasive that suits your needs—try it—and find out for yourself what it will do for your cleaning operations! You will soon learn why so many cost-conscious foundries have changed over to METAL BLAST abrasives! Send for a trial order—TODAY!

THERE'S A

METAL BLAST

ABRASIVE

FOR EVERY CLEANING

REQUIREMENT

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NOW ...Wire of High Finish for Electroplated Products in Many Shapes & Sizes

Bright, Smooth No. 3 Finish takes Plating Beautifully—Adds Eye-Appeal to Your Products

Continental's new technique for producing #3 finish flat and special shaped wire offers you a range of standard and special wire shapes with a satin smooth finish for electroplating purposes. Previously, only flat wire with a surface suitable for high polish electroplating was obtainable . . . but now from Continental you can specify #3 finish in flat, square, rectangular, oval, and other shapes on inquiry, in practically any size, temper, and analysis in low carbon and medium low carbon steels. Here is extra "eye-appeal" for moldings, product trim, or wherever a formed plated wire component is required. Send us a blueprint of your part, or mail the coupon below for complete information without obligation. Telephone or write today.

SPECIALISTS IN WIRE
FOR OVER HALF A CENTURY

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STEEL CORPORATION
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PRODUCERS OF:
Manufacturer's wire in many sizes, shapes, tempers and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, and special wire. ALSO, Coated and Uncoated Steel Sheets, Nails, Continental Chain Link Fence, and other products.

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Gentlemen: Please send us complete information concerning the new Continental #3 Finish Wire for Electroplating.

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Milwaukee; Buffalo Rubber & Supply Co. Inc., Buffalo; Dabney-Hoover Supply Co. Inc., Memphis, Tenn.; Harshberger Equipment Co., Portland, Oreg.; Eastern Engineering Sales Co., Roxbury, Mass.; S-A Products Co., San Francisco; Stephens - Adamson Mfg. Co., Los Angeles; Linder Cox & Co., Lakeland, Fla.; Langdon Supply Co., Kansas City, Mo.; Strong-Scott Mfg. Co., Minneapolis.

K-G Equipment Co. Inc., Allentown, Pa., maker of welding and cutting equipment, appointed the following distributors: National Welding Supply Co., Mobile, Ala.; Sanders & Stewart, Jackson, Mich.; Tex-Air Gas Co., Amarillo, Tex.; W & S Service Engineers, Joliet, Ill.; Welders Service & Supply Co., Cincinnati.

Firth Sterling Inc., Pittsburgh, appointed Boyer-Campbell Co., Detroit, distributor of its metalworking tools.

Adamas Carbide Corp., Kenilworth, N. J., appointed Hartwell & Co., Houston, as distributor of its tungsten carbide tools, tool tips, dies and wear parts. Adamas appointed John A. Zura, Cleveland, as its sectional service engineering manager for the Midwest.

NEW ADDRESSES

Hydro-Blast Corp. moved into its new plant at 10265 Franklin Ave., Franklin Park, Ill. The firm designs and makes foundry equipment.

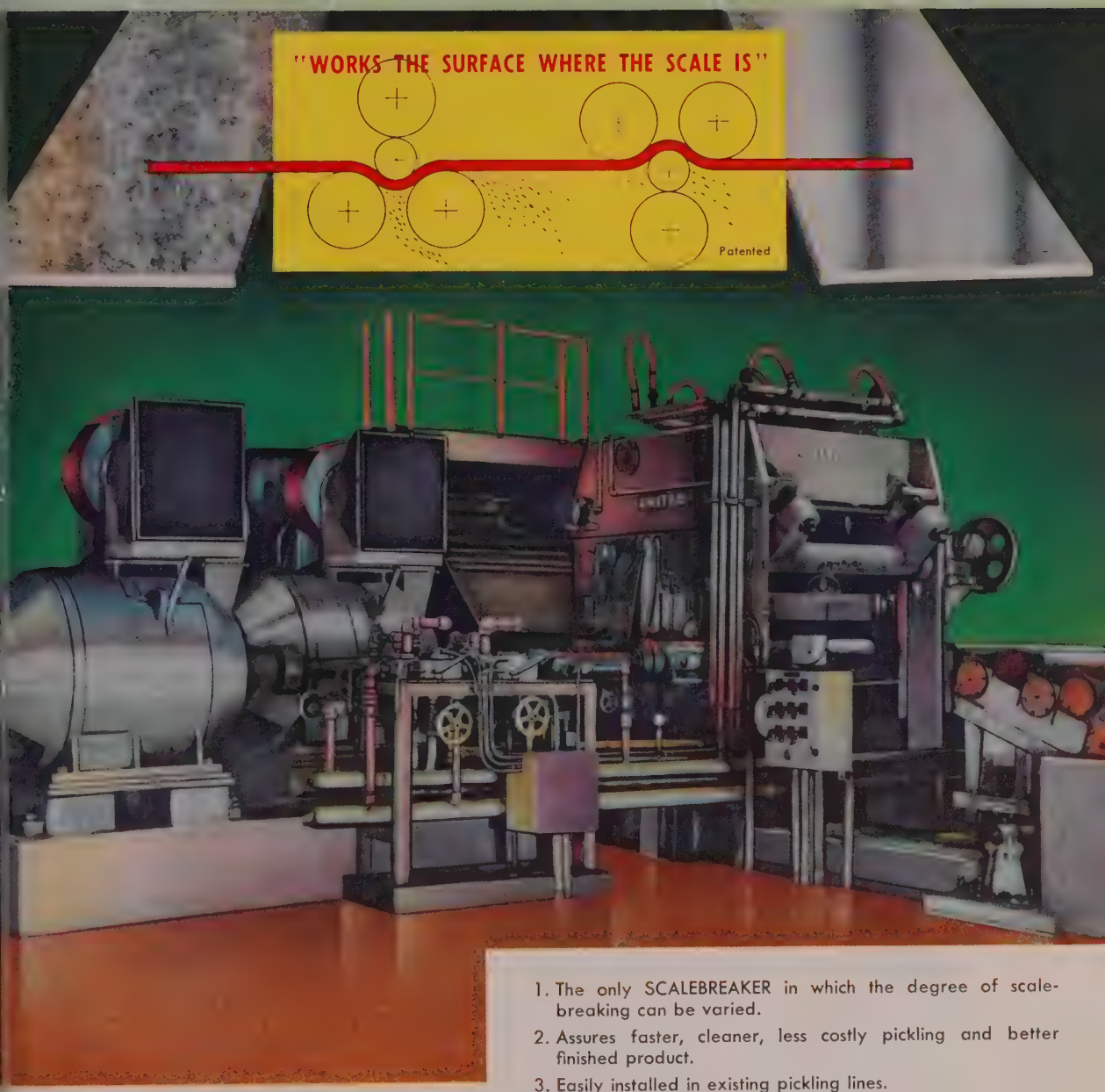
Inductotherm Corp., maker of high-frequency heating and melting equipment, moved from Glenolden, Pa., to a larger plant at 412 Illinois Ave., Delanco, N. J.

Yale & Towne Mfg. Co., Philadelphia, moved its Detroit regional sales office for hoists to the company's new branch at 4466 Woodward Ave.

U. S. Steel Corp.'s Gerrard Steel Strapping Division moved to 360B Shaw Road, South San Francisco, Calif.

UNITED

NEW *Strip Processing* SCALEBREAKER



1. The only SCALEBREAKER in which the degree of scale-breaking can be varied.
2. Assures faster, cleaner, less costly pickling and better finished product.
3. Easily installed in existing pickling lines.

Write today for complete engineering data.

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STEEL
September 5, 1955

Technical Outlook

RECOVERY ROOMS—Where the whole work area of a hot industry can't be air conditioned, it is feasible to put in small air-conditioned recovery rooms where workers can go for short rest periods, says Dr. Lucien Brouha of Du Pont's Haskell Laboratory for Toxicology and Industrial Medicine. Aluminum Co. of Canada Ltd. installed them in 1946. The company reports a sharp drop in absenteeism and turnover. Production increases have far outweighed costs.

STAGE IS SET—One automotive transmission builder will broach teeth on internal helical gears. The decision was largely influenced by the positive control of size and quality. Automatic loading and unloading features permit a fully automatic machine cycle and minimize manual part handling.

HEAT BARRIER—Insulating blankets for jet planes are being fabricated from alumina and silica fiber bats covered with stainless steel foil. Edges of the foil are welded to keep fuel and fluids out of the bats.

COLOR CONTEST—When choosing hues for that new product line, don't put all your trust on the "tried and true," says Mullins Mfg. Corp. Its turquoise and cream yellow Youngstown Kitchens are doing fine, but "sunset copper" is a real sales eye opener. It's a hot apricot.

ACCENT ON CASTABLES—Feeling that methods of evaluating castable refractories have lagged behind the expanding importance of the material, the Refractories Institute, Pittsburgh, is putting more emphasis on this research. The Multiple Fellowship (Refractories) at the Mellon Institute has the project. One of the first goals: A simple and more accurate way of measuring the consistency of Portland cement and concrete.

RESILIENT DIES—Kirksite dies with plastic faces are banging out ducts, beads, angles, channels and shallow pans on a drop hammer at Republic Aviation. Both punch and die are faced with expoxy compounds, but the die face resin contains a wear-resistant aluminum oxide filler. They produce aluminum and steel parts with a minimum of wrinkling.

SUPERDENSE CONCRETE—Protective shielding of atomic hot cell installations takes immense thicknesses of concrete, with a density of 150 lb per cu ft. Victor Chemical Works announces a ferrophosphorus additive that doubles density without altering mixing or handling procedures. Thinner protective walls now possible will put operators closer, visually and mechanically, to their work.

SELF-PORTRAIT—Here are two ways radioactive tracers are being used in England: To follow metal flow in casting; and to make quantitative studies of microsegregation and its relationship to microporosity and tensile properties of cast steel. Autoradiography by tagged atoms of alloying elements is one of the techniques.

SEAGOING TUNNEL—A 6860-ft vehicular tunnel is being built in the shops of Baldwin-Lima-Hamilton Corp. at Philadelphia. As each 300-ft section is completed, it is floated to the tunnel site at Hampton Roads, Va. Sections are double-walled welded tubes, each weighing 50,600 tons.

etalworking Outlook—p. 35 Market Outlook—p. 119

Machine Tool Electronics for Tomorrow

A WILD DREAM, you'd say, if we told you one day you will hand an electronic computer an accurate scaled drawing, then sit back to watch completed parts roll off your line.

You may be right. But with this goal in mind, many intermediate developments may prove just as shocking.

The Present—Up to now, the use of electronics with machine tools has been hampered because components were developed for other fields. They lacked long life and maintenance-free operation.

One nearly perfected development is the electronic variable speed drive. Volume production should put it within easy reach of machine tool builders.

Advantages — Variable speed drives will adjust cutting speeds to satisfy conditions for tools on multipurpose, universal-type machines and step tool operation on single-purpose machines. They will supply continuous speed changing for facing and cutoff work to maintain constant surface cutting speed.

They will allow accurate speed regulation by tachometer or other feedback control to maintain fine surface finishes. Cutting speed can be regulated according to the hardness of the workpiece by motor load control devices.

In contour cutting and skin milling, speed is controlled by the depth of cut and shape of the piece. Faster cutting speeds with greater acuracy in following the shape of the part are needed. Present developments point to improvement here.

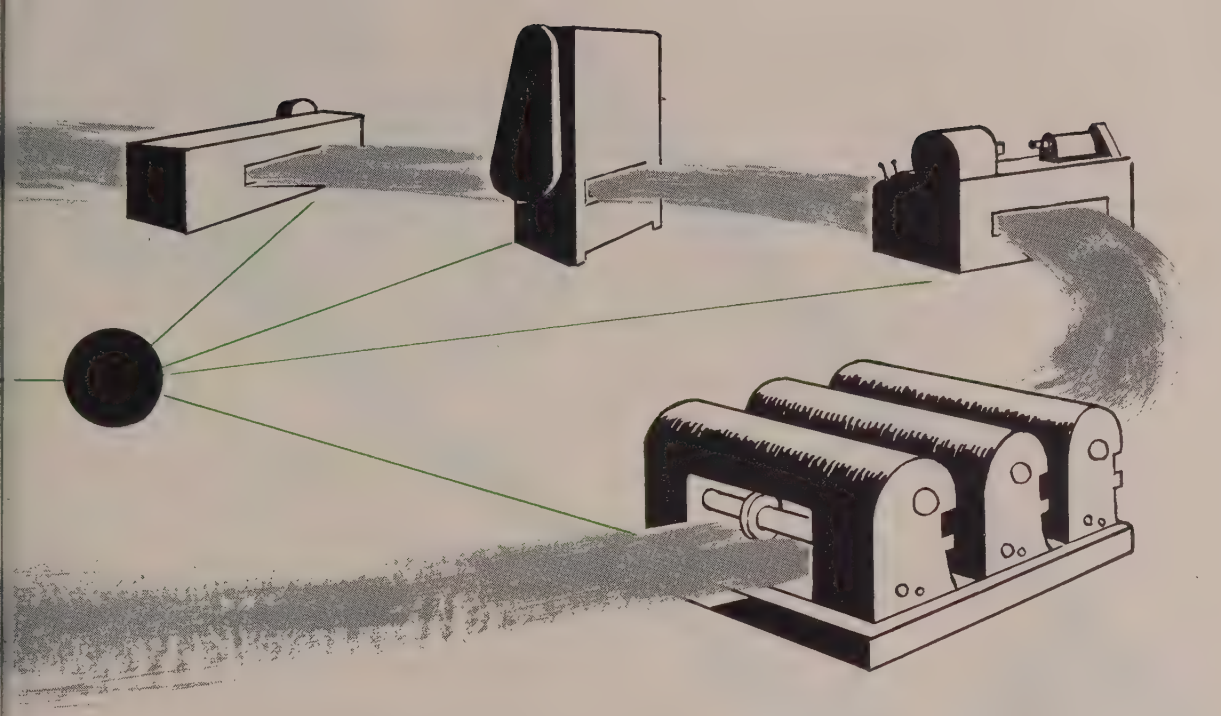
Timing and Counting—Electronic timers and counters have been applied successfully to machine tools. Both give extreme accuracy and long life. But unless these conditions are required, it is more economical to use mechanical types.

Tube and saturable reactors have been used to control large motor currents. They utilize a small power control signal; there is no contact burning as in mechanical contactors; and they pro vide accurate starting and stop ping of flow with no arc carry over or mechanical difficulties But, again, unless these operatin conditions are required, the addi tional expense is not practical.

Ultrasonics and Photo Tubes— Ultrasonics has been used for both machining and cleaning, but de velopments are in their initia stages. Ultrasonics works well fo cleaning in combination with so vents and for the machining o hard materials.

Photo tubes are excellent posi tion indicators. They have prove practical and economical. How ever, they need close maintenanc to prevent misoperation owing t dirt collecting on the lenses. Also wide voltage fluctuation wi cause misoperation or inoperatio

The Future — Maintenance o electronic devices in the future wi be simplified and made less ex pensive with the further develop ment of printed circuits, potte chassis and the general develop ment of less expensive and mor



By N. P. BASHOR
Division Mgr., Electric Controls Division
W. F. & John Barnes Co.
Rockford, Ill.

reliable components. The long range thinking should be toward a throwaway package rather than a repairable one.

Uses of television on machine tools have not been explored. Possibilities include continuous tool inspection, location and position of workparts, centralized inspection and remotely controlled inspection tools. Television offers greater safety for the operator or inspector than present methods.

Magnetic Amplifiers — These units have been tried in large current motor control but little has been done with small current control. Experiments are being made with small units to replace control relays.

The rapid rise of transistors has led to thinking on contactless control for machine tools. But it will be some time before transistors can be applied to machine tools with the degree of certainty afforded by control relays. Transistors seem to have the same difficulties as tubes, except they are more stable mechanically.

Gaging and Checking — With continuous progress in automatic machining and handling, there is greater need for companion automatic gaging and checking devices. Particular needs along this line include devices for checking location and size of holes, for indicating dull tools and for continuous inspection of coolant and hydraulic oil level and cleanliness.

Television, proximity probes (both inductive and capacity), radioactive materials, and perhaps radar are some of the electronic devices that can be used to do this.

Servo Devices — Applications: Punched card, punched tape or magnetic tape control; synchronization of two or more moving parts of a machine; synchronization of two or more machines; remote control of large power units.

Servo devices used with machine tools have been limited in speed and accuracy. However, they are limitations of the power devices which they control, not the servos. Their usefulness will force development of suitable power devices.

Telemetering and frequency control applications to machine tools hardly have been touched. It is possible that most or all of the wiring, except power wiring, can be eliminated from machine tools. This is a long-range program, but well within possibility.

Computers — These machines have proved complex and expensive. Most applications have been to universal-type machines which means that the computer and machine must produce a wide variety of parts. Perhaps a simplified computer can be applied to single-purpose machines and reduce the complexity and cost.

To hasten the use of electronics in the machine tool industry there is need for a meeting of minds between electronics engineers and machine tool people. Electronics engineers need to be taught machine tool practice so new electronic equipment can be made which will satisfy the needs of the machine tool builder and justify the expenditures of the electronic equipment manufacturer.

Part I

By LEE VORCE
Regional Product Engineer
Behr-Manning Division, Norton Co.
Detroit

Abrasive Belt Polishing

CONVERSION from setup wheels to coated abrasive belts running over contact wheels has been phenomenal the last few years.

Many factors have influenced industry to make the change. Dominant are: Labor cost, material cost, wheel cost, belt life, conversion cost, finish uniformity and higher production.

The turnover of labor in polishing and plating departments has created an enormous training problem. The only skill necessary in the use of abrasive belts running over contact wheels is the presentation of the piece to the belt. Other factors are predetermined.

Down time for wheel changes is eliminated; and if a change of grit, bond or belt flexibility is specified, it is made in seconds. Even a bigger saving in labor cost is in the reduction of rejections and reworks.

Wasted Materials—Larger than the labor lost in rejects is material cost. Industry is taking the cost of rejected material into account in analyzing over-all setup wheel costs.

The cost of preparing a setup wheel is about the same whether it is ½ or 4 in. wide, whether it is of large or small diameter—the steps in preparation, drying time and break-in are still involved. On jobs requiring several shaped wheels to finish the job, wheel cost rises in proportion to the number of wheels used. The versatility of the soft contact wheel cuts this expense. One wheel can accept both convex and concave shapes as well as polish flats without wheel marks.

While setup wheel costs have been rising, abrasive belt life has been improving with a better understanding of the influence of speed, contact wheel density and proper specification of grit size, abrasive type, bonding and belt backing.

Dollars — The conversion cost (from setup wheel to belt methods) has been reduced almost to the point of insignificance. The finest backstand idlers cost less than $100 and will track belts from ¼ to 6 in. wide with no difficulty.

As for finish uniformity, the absence of wheel marks and wild grain streaks and the ability of the sharper belts to clear the work surface faster are proved facts. Even the softer finishes required for fine plating and for oil-

This is the first of three articles by Mr. Vorce on abrasive belt polishing. The second will appear next week.

• Extra copies of this article are available in quantities from one to three until supply is exhausted. Write Editorial Department, STEEL, *Penton Bldg., Cleveland 13, O.*

General Practice in Metal Finishing with Coated Abrasive Belts

ROUGHING (sprues, gates, risers, welds)

	Steel and Stainless Steel (cold and hot rolled)	Aluminum (cast and fabricated)	Brass, Bronze and Copper	Cast Iron
Abrasive	Aluminum Oxide	Silicon Carbide	Aluminum Oxide	Aluminum Oxide
Grit Range	24–60	36–50	36–50	36–60
Belt Speed (sfpm)	4,500 to 6,500	5,500 to 7,000	5,500 to 7,000	4,500 to 5,500
Contact Wheel and Density	Rubber (serrated) 70–90 Durometer	Rubber (serrated) 70–90 Durometer	Rubber (serrated) 70–90 Durometer	Rubber (serrated) 70–90 Durometer

POLISHING

	Steel and Stainless Steel (cold and hot rolled)	Diecastings	Aluminum (cast and fabricated)	Brass, Bronze and Copper	Cast Iron
Abrasive	Aluminum Oxide (Silicon carbide for stainless*)	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide
Grit Range	80–180	60–150	50–150	60–150	36–150
Belt Speed (sfpm)	4,500 to 7,000	5,500 to 7,000	4,500 to 7,000	4,500 to 7,000	4,500 to 6,500
Contact Wheel and Density	Rubber (serrated or plain) 20–50 Durometer, or sectional or finger-type cloth wheel, or free belt	Rubber (serrated or plain) 30–70 Durometer, or sectional or finger-type cloth wheel, or free belt	Rubber (serrated or plain) 30–70 Durometer, or sectional or finger-type cloth wheel, or free belt	Rubber (serrated or plain) 30–70 Durometer, or sectional or finger-type cloth wheel, or free belt	Rubber (serrated) 30–70 Durometer, or sectional or finger-type cloth wheel, or free belt

*To develop specified stainless steel finishes as per industry standards.

OILING OUT or FINISHING

	Steel and Stainless Steel (cold and hot rolled)	Diecastings	Aluminum (cast and fabricated)	Brass, Bronze and Copper	Cast Iron
Abrasive	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide	Aluminum Oxide
Grit Range	180–500	180–500	180–320	180–240	120–240
Belt Speed (sfpm)	4,500 to 7,000	5,500 to 7,000	4,500 to 7,000	4,500 to 7,000	4,500 to 7,000
Contact Wheel and Density	Rubber (serrated or plain) 20–30 Durometer, or sectional or finger-type cloth wheel, or covered platen, or free belt	Rubber (serrated or plain) 30–70 Durometer, or sectional or finger-type cloth wheel, or free belt	Rubber (serrated or plain) 30–70 Durometer, or sectional or finger-type cloth wheel, or free belt	Rubber (serrated or plain) 30–70 Durometer, or sectional or finger-type cloth wheel, or free belt	Rubber (serrated or plain) 30–50 Durometer, or sectional or finger-type cloth wheel, or free belt

ing out work are easily obtained by the use of glue bonded belts in the very fine grits. This is especially so on stainless steel where a minimum amount of buffing is desirable.

Backstands—There are several popular types of backstand idlers with either spring or air-cylinder arrangements for automatic take-up and different methods of articulation to control the tracking of the belts over contact wheels. A new backstand idler has a tracking mechanism which enables it to control a belt from ¼ to 6 in. wide over any type contact wheel.

The secret lies in an arc-travel adjustment of the idler about an axis well below the idler and in the plane of the contact wheel. It tilts the belt into position rather than twisting or stretching it, to give such fine control of belt position that sizable overhangs at the edge of the contact wheel are stable when it is necessary to wipe into radii. Belt life is better with such idlers.

In backstand idler installation nothing is more important than floor mounting. This gives the belt a full 100 degrees of undisturbed contact with the wheel before it wipes the workpiece. The wrap-around is doubly important with soft wheels, as collapse of the wheel at the point of work does not disturb tracking, or, indeed, throw the belt off the contact wheel. Idlers mounted at the level of the contact wheel, or above it, will not successfully track on soft contact wheels in workaday use by not-too-careful operators. Wrap-around of the belt on the contact wheel for a circumferential distance at least equal to the diameter of the wheel is a safe rule of thumb.

Another dollar-saving feature of a good idler is a quick release handle for changing belts in a matter of seconds without disturbing tension or tracking adjustments.

Belt Types—Belt type depends on the polishing problem and the

metal to be worked. Belt selection is made along with the decisions on surface speed and type of contact wheel. But, in general, the all-resin belt and the resinized (resin-over-glue) belt give longer life than glue-bonded belts. Cut is somewhat sharper and harsher but this can be adjusted by proper grit size and lubrication decisions.

Belts are available in two backings: X-weight (drill cloth) which is stiff and for heavy-duty grinding and polishing; and J-weight (jean cloth) which is a more flexible fabric for contour polishing or free beltwork (strapping). J-weight is in general use on contour polishing to reduce edge cut into softer metals or into the radii of the piece being polished.

Contact Wheels — There is a wide variety in contact wheels—from metal to wood to cloth to plastic to felt to compressed fiber. Six basic types do most of the work. Only these six are covered in the table.

Rubber wheel manufacturers have contributed many new types of serrations and many degrees of hardness or softness, as well as the popular plain-faced rubber wheels. The scoop-tooth serration is for aggressive cutting, mostly with coarser grits up to 120. Lands of scoop-tooth wheels are about 3/16-in. wide with grooves about ½-in. wide. The standard serrated rubber wheel is for cut as well as finish, and makes for excellent blending of finishes.

A new x-face wheel is basically a scoop-tooth wheel with the regular 45-degree serrations crossed by 20-degree serrations ¼-in. wide. This staggers the lands on the face of the wheel. It produces a softer face for a given rubber density. It accommodates to contours more easily than simply serrated rubber wheels. Densities in rubber wheels range from 20 to 100 Durometer, the higher the number the harder the rubber.

Rubber contact wheels extend belt life and cause most belts to cut better. Plain face rubber contact wheels provide a beautiful over-all pattern of finish.

Canvas—The second most popular type of contact wheel has compressed canvas sections. Each section is composed of buff material cut in a "T" form and packed into a wheel to provide varying densities.

These wheels are versatile. Sections may be added to vary wheel width. Wheels of this type may be used from ½ to 6 in. wide for hand polishing with belts.

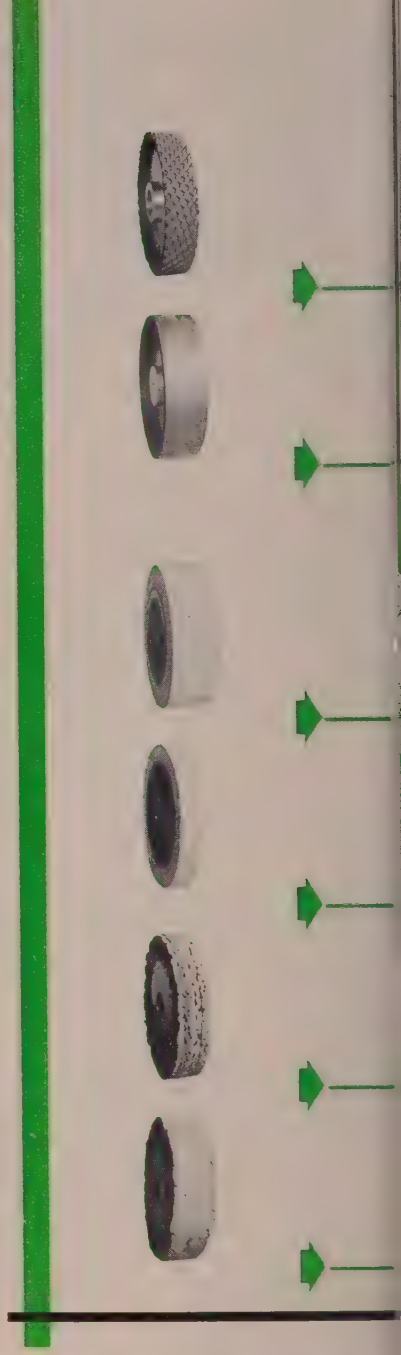
Fourteen-inch diameter wheels are used with 10-in. diameter flanges to give greater face density and better belt tracking. The flange stiffens the side of the assembly but leaves a soft wheel face to work with. Seven-inch diameter flanges are similarly used on 12-in. and 10-in. diameter wheels. Sectional cloth wheels are manufactured in all diameters from 16 down to 6 in. in diameter.

The newest type soft contact wheel is made of finger sections of canvas which extend out from a solid hub. Fingers are not in sectional planes (as in a finger buff wheel) but are staggered across the face of the wheel. Pressure of the workpiece against the belt doesn't result in sectional striping, but yields an over-all soft finish unlike other soft contact wheels. Finger-type cloth wheels are especially useful on flats or for soft finishing, as well as gentle concave and convex contours.

Solid sectional type wheels are made up in definite widths with a solid cardboard center. This wheel also is concentrically sewed and smoothly faced for uniform finishing. The wheel will not run stripes as do loose sectional type wheels. They are available in all widths from ½ to 4 in. They may be added side by side for various widths.

Surface Speed—The life of an abrasive belt depends greatly on the speed at which it is run. It is also influenced, of course, by the workpiece and the hardness of the contact wheel. An often neglected factor is that working density of a soft wheel increases with the speed at which the belt is run. The surface speeds recommended in the General Practice Table (page 87) take this into account.

Exhaustive tests show abrasive belt life and cutting ability is greater at speeds below 7000 sfpm. A belt cuts at its maximum between 5000 and 7000 sfpm. Higher speeds cut down dwell time of the grit on the metal and lessen the cutting ability of the belt. Contour polishing is smoother when soft belts are used at speeds of 5000 to 7000 sfpm. Fine finish should be obtained by using fine grit sizes, not by speeding the belt.



Lubrication—Various lubricants are used on coated abrasive belts. Some are hard oil types, some contain tripoli powder for polishing zinc and aluminum diecastings. some contain unfused alumina for

Type Contact Wheel	Wheel Design Purpose	Advantage of Wheel	Operations
Rubber X serration (20 through 100 Durometer)	Stock removal; rough grinding; intermediate polish	Aggressive cut; increase belt life	Snagging gates, cutting out pits and surface defects of all metals
Rubber Plain Face (20 through 100 Durometer)	Intermediate and final finishing, also for oiling	Desirable density for soft polishing and finishing	Fineing brass, bronze, copper Oiling and polishing aluminum, steel and zinc diecastings
Compressed canvas Densities: Very Hard Hard Medium Hard Medium Medium Soft Soft Supersoft	For all types of polishing. Less aggressive for snagging than rubber. Fine for intermediate and finishing work	Softer types offer fine finishes. Long wheel life. Can be shaped for contour work	Polishing all type metals
Solid sectional (Soft, medium and hard density)	Designed in definite wheel widths. Provides uniform density; will not run stripes in work	Low priced, uniform finish Adjusts itself easily to all contours	All types of polishing except snagging
Buff section (Mostly soft density)	Provides easy width makeup by adding sections	Low cost, provides wheel for contour polishing	All types of polishing except snagging
Finger type (Soft density)	For polishing contours, flats	Uniform cut and finish	Polishing and finishing only

high finish and some are harder greases for use with coarse belts. The right lubricant will oil out work easily, prevent drag of grit and improve finish.

Grease also prevents burning of the metal, although longer length of grit travel between impacts on the work (inherent in belt techniques) provides greater opportunity for the abrasive to cool. Abrasive does not burn up so rapidly with belt polishing as with setup wheels.

We have had best results with low melting point greases which remain wet on the belt and do not load it before it is fully worn. Low melting point greases also soften the edges of flexible (J-weight) belts, so they can reach and fit more easily into contours.

Other Points — Many installations have been made with belts too wide for the job, resulting in a waste of abrasive material on either edge of the belt. If the job requires only a 2-in. belt, use a 2-in. one. It is a failing of most operators to use only the center of a contact wheel if the full width isn't necessary to the job. Using the full width of a 2-in. belt rather than using merely the central portion of a 3-in. belt effects a saving of as much as 33 1/3 per cent in belt costs.

The problem of worn spindles which require shimming to keep contact wheels in perfect balance is real and common in offhand work. Worn spindles result in poor belt life, chatter marks on the workpiece and needless abuse of the contact wheels.

MACHINE TOPICS

By R. F. HUBER, *Machine Tool Editor*

MACHINE TOOL builders didn't escape the New England flood, but damage was light.

Reed - Prentice Corp., Worcester, Mass. was the hardest hit in this machine tool stronghold. Its production floor was covered with 8 ft of water.

The water came on Friday. By Monday, the water was gone, but it left all production facilities covered with a layer of slime and mud. More than 50 machines were in process. They, too, were covered.

Now comes the big job of cleaning up machines, motors and drives. Best company estimate is that damage will be between $200,000 to $300,000. No structural damage to its buildings is reported.

Recuperation is expected to take the company about three weeks.

Just west of Worcester, in Springfield, Van Norman Co. had 3 ft of water on its production floor. Damage was slight. Most production departments were left covered with mud, but the clean-up got them back into production in a few days. Shipment schedules might be delayed as much as two weeks—no more.

Spectator — Taft - Peirce Mfg. Co. is in Woonsocket, R. I., one of the hardest hit communities. Despite complete loss of some employee's homes, the T-P plant was untouched. F. S. Blackall Jr., president, says the water came within a couple hundred yards of the plant befor it receded.

T-P had a "grandstand seat" when the flood hit—the plant is that close to the Blackstone river. Even power to the plant was maintained right through, except for a few hours Saturday.

Machine tool builders up north in Vermont and New Hampshire escaped clean. So did those in Hartford and Bridgeport, Conn.

Some who escaped losses will feel effects of the flood because of damaged rail facilities. Some report that their subcontract facilities were hit.

Firms Join

The plant of Heald Machine Co., Worcester, Mass., has been purchased by a new subsidiary of the Cincinnati Milling Machine Co. Heald machines will continuue to be built under the Heald name. Richard A. Heald becomes chairman of the board and C. F. Roby becomes president of the Heald company. Mr. Roby formerly was a vice president at Cincinnati Milling Machine Co. Details have not yet been made public.

Show Figures

The National Machine Tool Builders' Association estimates that "some 200,000 executives of manufacturing companies" will attend the Machine Tool Show that opens this week in Chicago.

They'll see more than 500 machine tools. Total value put on them: $20 million. That's for the Amphitheatre Show alone. Exhibits will cover 10 acres.

Stamping Out Costs

Appliance maker's automatic press line will pay for itself in 1600 working hours

EACH HOUR 180 range bodies roll off the production line at the Hotpoint Co., Chicago.

An electric crane brings bundles of sheet steel to the line and places them on the loading conveyor of a Dexter feeder. Sheets come cut to sizes—127 9/16 x 38 7/8-in. The steel is conveyed to the feeder's elevator platform which lifts it to the feeding mechanism, and sheets start on their way to becoming electric ranges.

They pass through a set of rollers that covers both sides with a drawing compound which lubricates the press dies.

AUTOMATIC FEEDER
. . . starts sheet on its way

Presswork—Then the 0.0418-in. thick sheet successively passes through four 380-ton presses which emboss, pierce, blank, draw and form it. Two more forming operations progressively bend the flat sheet into an open-end box. Next, the overlapping seam is welded.

Finally, the completed body is conveyed to a manual welding line where gussets are installed before the fabricated piece goes to the finishing department.

Timing—Presses in the line go on stroke simultaneously. The transfer conveyor indexes between strokes and the Dexter feeder delivers a new sheet at the right time.

Although this installation cost about $1 million, it is entirely justified, Hotpoint says. It's estimated that the line costs $10,000 less to run than manually fed and operated ones in a 16-hour day.

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. . . separate from current control, permits choosing the exact arc characteristic for every job and welding condition. Voltage control is full range and stepless, with no limited "average" settings or blind spots. The weldor can select the arc characteristic for a basic welding position and pinpoint the setting for particular conditions.

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No "vacuum cleaner" floor dust pickup.

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Conservatively rated for long life. Special finish protects from corrosive atmospheres.

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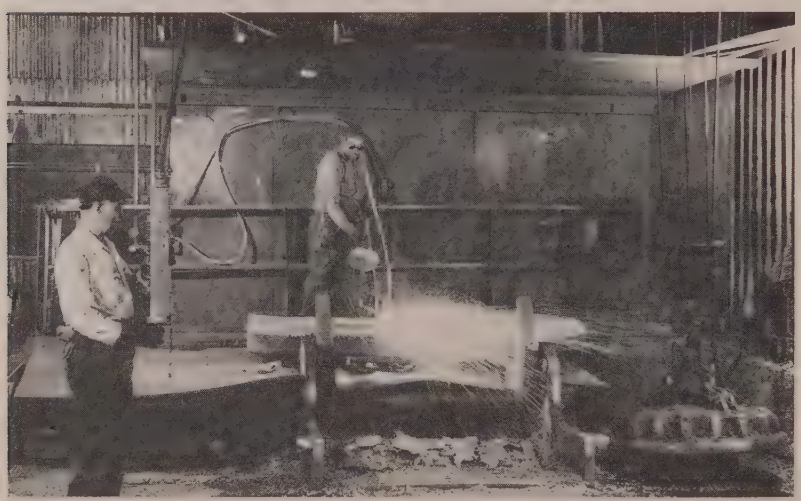
This 120-ft duct and settling chamber enables Timken to . . .

Keep Scarfing Dust Under Control

HOT SCARFING isn't considered one of the real dirty operations in a steel plant. True, it does raise a small cloud of oxide dust, but is it enough to worry about?

Steel operators at Timken Roller Bearing Co.'s Canton, O., plant thought it was, and some 9000 lb of iron oxide and other dust particles every week prove their point. That's how much material is trapped in its dust collector every week, preventing it from depositing on neighborhood window sills and front porches.

Four Scarfers—Timken conditions the surfaces of hot billets in a building that houses four scarfing operations. The high-velocity oxygen stream kicks up the fine oxide material that has been burned off. Instead of allowing it to flow into the atmosphere, however, a 30-hp blower at each scarfer forces the dust-laden exhaust gases into a large air duct, 8 ft square and 120 ft long.

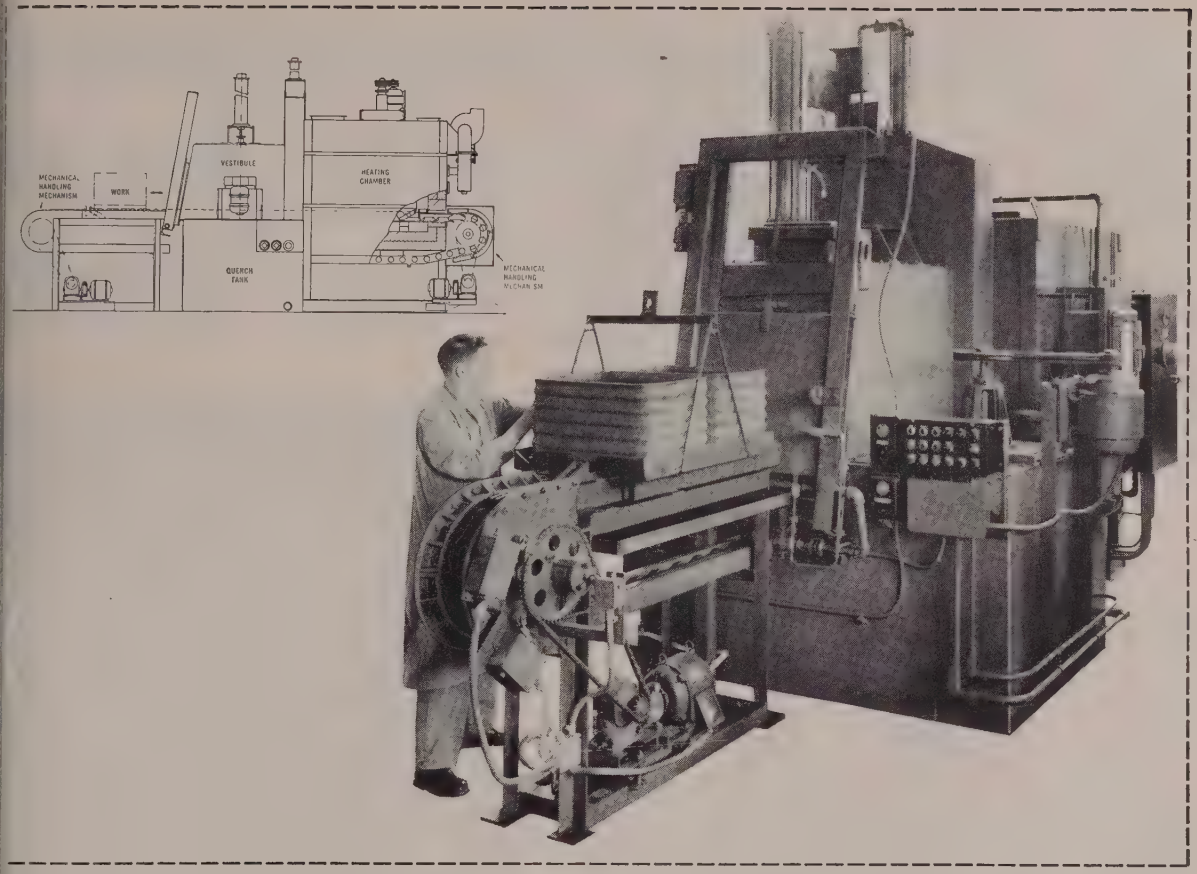


A 30-hp exhaust fan at each of the four scarfing beds draws gases and dust into the central duct. The hand-operated magnet cleans up around beds

Because of the size of the duct, the velocity of the gases is decreased and the heavy particles settle out. Then gases are conducted through a baffled settling chamber, 16 x 24 x 32 ft, where airborne particles are trapped. The clean gas is exhausted into the atmosphere.

Settled material is collected in two large hoppers which are emptied once a week. The by-product, mainly iron oxide, can be used to replace iron ore in the electric furnaces at the melt shop.

Timken gains three ways: Better working conditions, better community relations and a usable recovery product.



Automatic Allcase = Automatic savings

Now you can push a button and get *automatically* uniform work quality and lower labor costs with Surface Combustion's Allcase furnace. These combined advantages—gained by new automatic handling and cycle control—give you low-cost, high-volume production in batch heat treating with controlled atmospheres.

One operator can handle 3 to 10 of these furnaces, programming his furnace charging at his convenience. He can put a load on the charge-discharge mechanism in front of the furnace at any time while the previous charge is in the heating chamber. The entire cycle is governed by temperature controls and timers pre-set to metallurgists' specifications.

All of the new Allcase automatic handling equipment is, of course, optional, and any degree of automatic handling can be provided. Critical physicals can be reproduced time after time, with a minimum of human error and supervision.

Write now for the story of the new Automatic Allcase

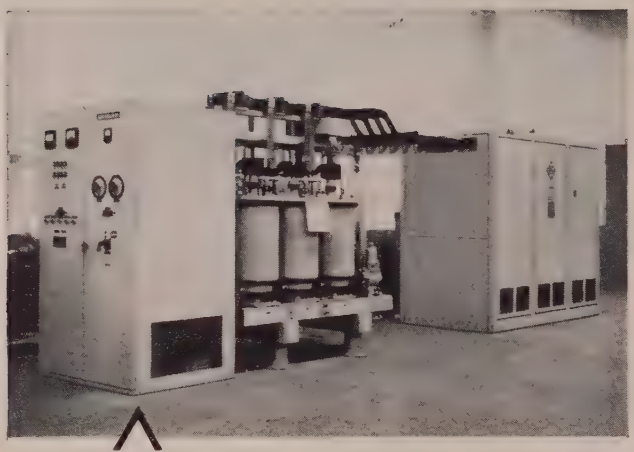
Allcase is a trademark of S.C.C.

Surface
HEAT TREATING EQUIPMENT

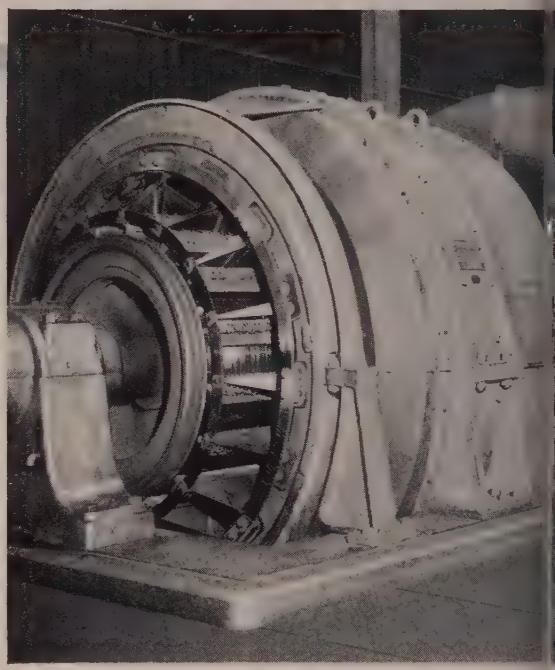
SURFACE COMBUSTION CORPORATION, TOLEDO 1, OHIO

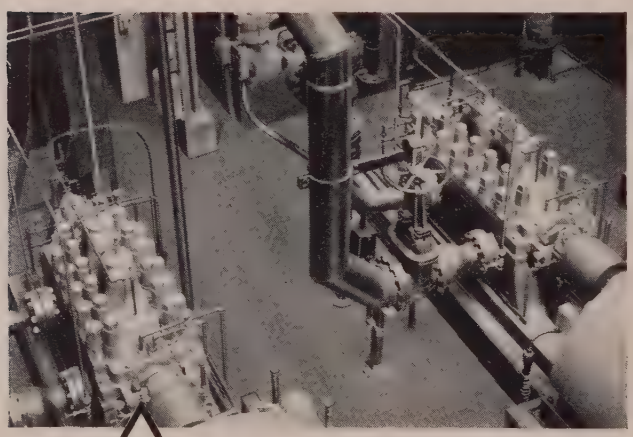
Helping Youngstown Top Steel Year After

ALLIS-CHALMERS Steel Mill EQUIPMENT



This 1000-kw, 250-volt Allis-Chalmers mercury arc rectifier furnishes direct current to cold mill auxiliaries. An additional low-first-cost, high efficiency unit of this type and capacity is being installed in the tin mill.





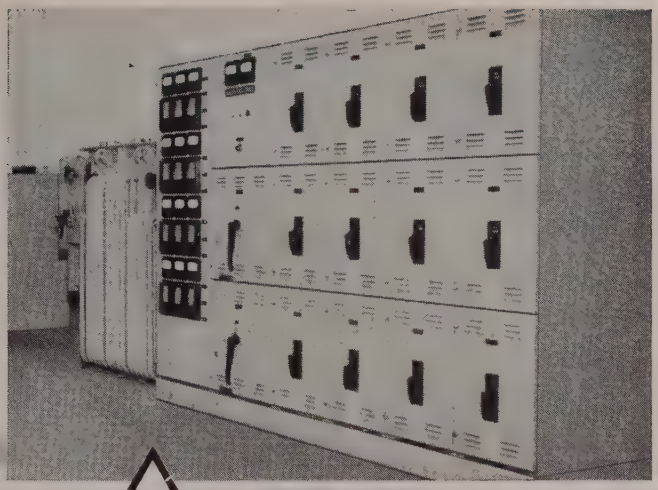
Two 6 by 4 five-stage Allis-Chalmers descaling pumps rated 1000 gpm, 1140 psi. Allis-Chalmers has also furnished fire pumps, motors and controls for other applications at the Indiana Harbor mill.

Equipment Installed in 1940 Still Going Strong as new Equipment is Added to Keep Pace with Today's Production and Quality Requirements

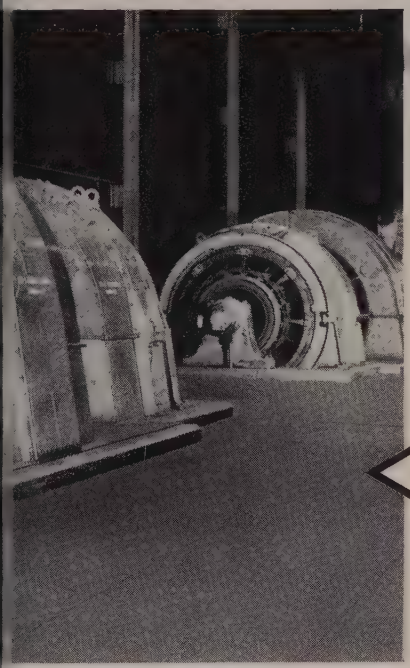
A-C ALLIS-CHALMERS

ALLIS

Obtain Production Year



Allis-Chalmers 1000-kva, 440-volt substation serves the cold mill at Youngstown's Indiana Harbor Works. Unit has non-flammable *Chlorextol* liquid-filled transformer. Additional substations of larger capacity are now being furnished for expansion at this plant.



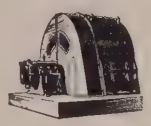
These two Allis-Chalmers 6000-kw, 600-volt motor-generator sets supporting the 54-inch hot strip mill have been operating at rated capacity and above for 15 years — with minimum maintenance.

SWITCHGEAR, transformer, substation, and rectifier equipment was recently added to the growing list of Allis-Chalmers installations at The Youngstown Sheet and Tube Company's Indiana Harbor Works. These Allis-Chalmers units were specified for the new cold mill that is part of the major expansion program at the Indiana Harbor plant.

For many years, Allis-Chalmers equipment has served Youngstown well. Motor-generator sets, motors, pumps, *Texrope* drives, transformers, switchgear—all have been supplied over the years to help keep production at The Youngstown Sheet and Tube Company plants modern, flexible and economical.

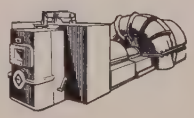
You too can take advantage of the wide range of Allis-Chalmers products and superior service . . . backed by experience gained serving the steel industry since the days of the famed Corliss engine drives. For help in planning new facilities or modernizing present plants, contact the A-C office in your district, or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-4836

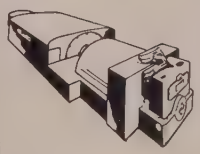
Other Allis-Chalmers Equipment for the Steel Industry



Wide Range of Motors for main mill and auxiliary drives — ac or dc — from 1 hp to 10,000 hp — and supporting rectifiers or m-g sets.

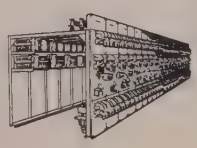
Blast Furnace Blowers are an important part of the complete A-C line of single and multi-stage centrifugal blowers, axial and rotary compressors, and vacuum pumps for the steel industry.





Power Generation Equipment includes steam turbine-generator units 2000 kw and larger for fluctuating steel mill loads. Also condensers, pumps and auxiliary drive motors.

Steel Mill Control offered by Allis-Chalmers includes constant potential and variable voltage systems, magnetic amplifier, electronic and mechanical regulators, and liquid rheostats.



Chlorextol and *Texrope* are Allis-Chalmers trademarks.

CHALMERS

Cold metal goes in here . . .

slides slowly through here . . .

Steady Stream of Aluminum

By VAN CALDWELL
Associate Editor

CONTINUOUS MELTING has come to the aluminum foundry. At Monarch Aluminum Mfg. Co., Cleveland, molten metal runs steadily from three furnaces unlike anything seen before on a foundry floor.

Simple in concept, they are essentially refractory-lined sloping tunnels with a radiant heat source at the lower end. Aluminum ingot is pushed in at the high end and flows out molten at the other. In a hot furnace it takes about ½-hour for an ingot to make the passage.

Steady Stream—Monarch's furnaces are rated at 1500, 1800 and 2400 lb per hour. They produce hot metal 2 hours after start up and pour continuously for two shifts. They could keep going around the clock, but it takes one shift to condition the molds.

The largest furnace is about 30 ft long by 3 ft square, and looks more like a heat-treating furnace than one for melting. Mounted on legs, it could just as well be hung from the roof trusses, clearing the floor underneath for other uses.

In and Out—At any one time there is only 25 to 50 lb of molten metal in the furnace, most of it in a small holding bath. Because the bath is so small and the metal leaves it so quickly, there is virtually no chance for dross to form.

Two features make the furnace work: 1. The radiant gas-fired heat source, engineered by Selas Corp. of America, that concentrates the heat in the ingot core, and capitalizes on excess heat for preheating so effectively that gases leave at under 300°F. 2. A simple trick that foils the latent heat of fusion of the oxide layer, so that heat input never needs to be much beyond that needed to maintain the 1400° F pouring temperature.

The Trick — "On the prototype furnace, we poured in enough heat to bring the ingots to 4000°F and still they wouldn't melt," says John H. Keating, Monarch vice president in charge of manufacuring, who developed the furnace. "They only softened and slumped. Then, one day we broke the oxide shell with a poker. That did it."

They don't even poke the ingots any more. The floor of the furnace scratches them enough to cut through the oxide, and in the reducing atmosphere the oxide doesn't re-form. The ingot melts inside its oxide envelope until it meets a cofferdam. Out flows the metal underneath and the oxide hangs up against the dam.

Radiation—This wouldn't work without the radiant heat focused in the center of the ingot (they melt from the inside out), or the preheating that lets the radiant burners concentrate on the final heat jump to the melting point. It wouldn't work so well if the ingots weren't moving end-to-end pushing each other past the cofferdam.

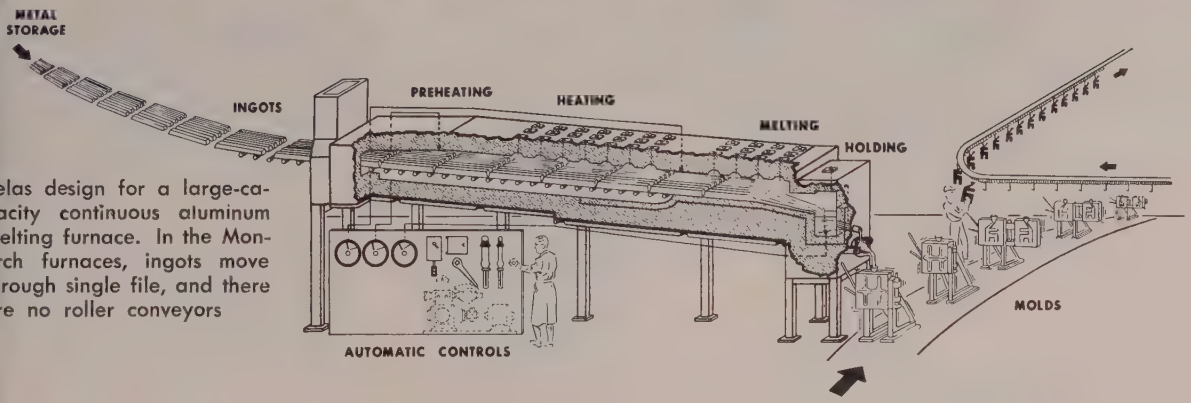
No flame impinges on the ingots. The burners are Selas's Duradian type which burn a gas-air premixture, and need no air in the furnace atmosphere for combustion. Heating is primarily by radiation. Gas consumption is half that of a reverberatory for the same hourly capacity.

Plus and Minus — After two years of working with the fur-

What the Continuous Melting Furnace Offers

Hot metal from a cold furnace in 2 hours
Adaptability to automatic feeding
Adaptability to automatic pouring
Greatly reduced fuel consumption
Cool working conditions
Casting analysis same as ingot analysis
No degassing
Easy alloy change-over
Easy shutdown
More working area
Wide efficiency range

and comes out molten here



elas design for a large-capacity continuous aluminum melting furnace. In the Monarch furnaces, ingots move through single file, and there are no roller conveyors

laces, Monarch and Selas are ware they have fathered a darling or foundries, but a problem child or furnace makers. There's no denying many of its advantages (see box). It is sure to be tried n smaller versions for diecasting, oth with aluminum and zinc. It s certainly well suited for high-roduction runs and automation.

How far it will go in replacing everberatories and crucible types s a touchy question. At Monarch, he reverberatories are on the way ut: They can't compete on a fuel ost and working comfort basis.

There's no version that will work n oil or electricity (Monarch ried electricity without success), o the popularity of the furnace vill be tied to relative fuel costs. t won't handle a scrap charge, nd there's nothing to indicate hat it will replace other types or holding and remelting.

To Measure—Installed cost will, of course, be part of the economic picture. Selas will make and market tailored furnaces. The furnace is simple, but to get the most out of it, controls and automated equipment could run up the cost of the package.

Monarch has carried automation part way. Ingots move up to the charging end on a chain conveyor and are charged by a hydraulic ram, but they are loaded on the conveyor by hand. This makes for versatile loading—ingots of varying size, or of varying composition to change the composition of the alloy. Alloys can be changed without shutting down the furnace, simply by figuring charging-to-pouring time.

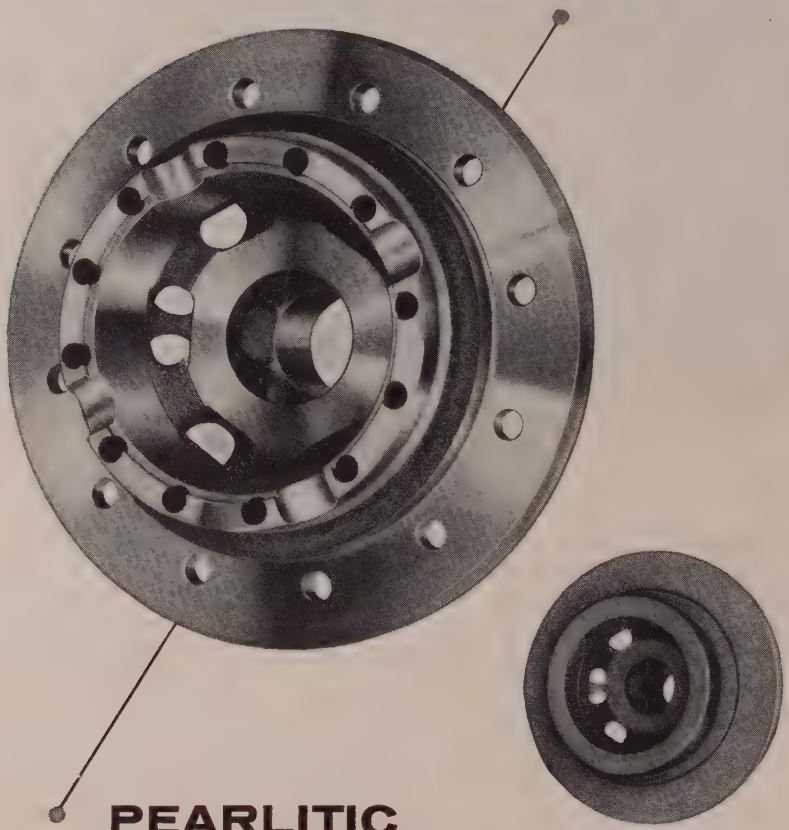
Pouring—Permanent molds are being poured on an indexing turntable (an inline conveyor could be used.) The pouring ladle has two opposite lips, one for pouring, a lower one for overflow into a holding pot. Tilting of the ladle is actuated by movement of the conveyor.

Metal running into the ladle is so gas-free that a gasifier sometimes has to be added. No oxide flows into the ladle. It's held back by the cofferdam, and two or three times a shift an operator opens a furnace door and skims it off.

Regulation—Controls are interlocked to co-ordinate rate of ingot feed, fuel flow and pouring temperature. Temperature is monitored by thermocouples in the ladle and holding bath. Pouring rate is controlled by varying the rate of ingot feed.

At 60 per cent of its hourly capacity, the furnace shows no drop-off in efficiency, and can compete costwise to below 25 per cent of capacity.

MACHINABILITY INDEX 80-90*



PEARLITIC MALLEABLE CASTINGS

* B1112 STEEL = 100

Low machinability index of 80-90 (B1112 steel = 100) is probably reason enough to warrant serious consideration for your product.

But pearlitic malleable castings—from National—don't stop there. They have great ultimate strength . . . resist wear under heavy loads at high speeds . . . make excellent non-seizing bearings . . . can be air or liquid-quenched . . . can be smooth-finished.

Don't overlook the advantages of pearlitic malleable. For pearlitic malleable castings—from National—can often reduce manufacturing costs, weight and assembly time . . . can increase the sales potential of your product. AA-1806

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY

Cleveland 6, Ohio

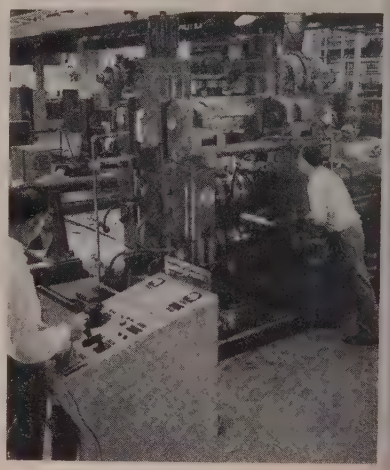
The Nation's largest independent producer of malleable and pearlitic malleable

New Bar Mill

General Electric equips a reversing rod and bar mill with a rectifier drive

GE's new research lab in Schenectady, N. Y., has a rectifier-driven rolling mill. They want to find out if it or motor-generator sets are more economical for small reversing mills.

Fast reversal is a feature of the rectifier drive. The drive acts as an inverter as well as a rectifier. It can accept pump-back current from the mill motor during reversal.



EXPERIMENTAL MILL
. . . reverses in 1½-seconds

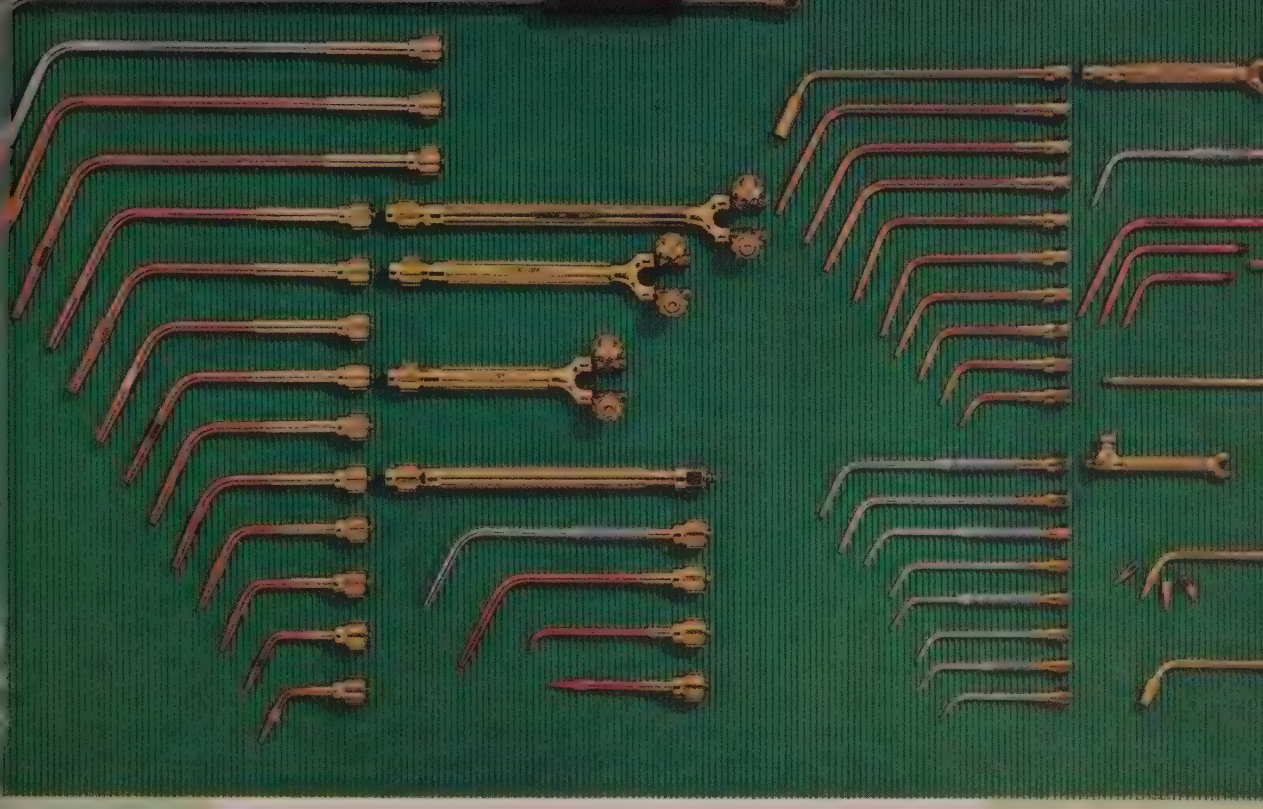
The rectifier is controlled by a voltage regulator that gives five speed points in each direction. There is a creep speed for uniform roll cooling.

It has phase-controlled, sealed-tube ignitron rectifier units. The rectifier's overload characteristics are matched to the motor characteristics.

The drive motor is operated up to 550 volts dc; its rating: 630 hp, 925 rpm.

Saw Testing in Chicago

Hacksaws and band saws will fight it out at booth 416 at the Machine Tool Show (Sept. 6-17). A firm of test engineers will use new models of Armstrong Blum Mfg. Co., Chicago, to determine costs of band and hacksawing. Results will be given on request at the show.



Fit the flame to the job with

VICTOR nozzles and tips

Why lose time and waste gas with a "misfit" flame? Start *right* with a Victor torch, match the flame to *any* job with Victor interchangeable nozzles and tips. Victor torches that "grow with the job" cost no more, pay you plenty in faster, better work. See them at your Victor dealer's today, or write *now* for catalog.

VICTOR for welding

VICTOR EQUIPMENT COMPANY

Mfrs. of welding & cutting equipment; hardfacing rods, blasting nozzles; cobalt & tungsten castings; straightline and shape cutting machines.

844 Folsom St.
San Francisco 7

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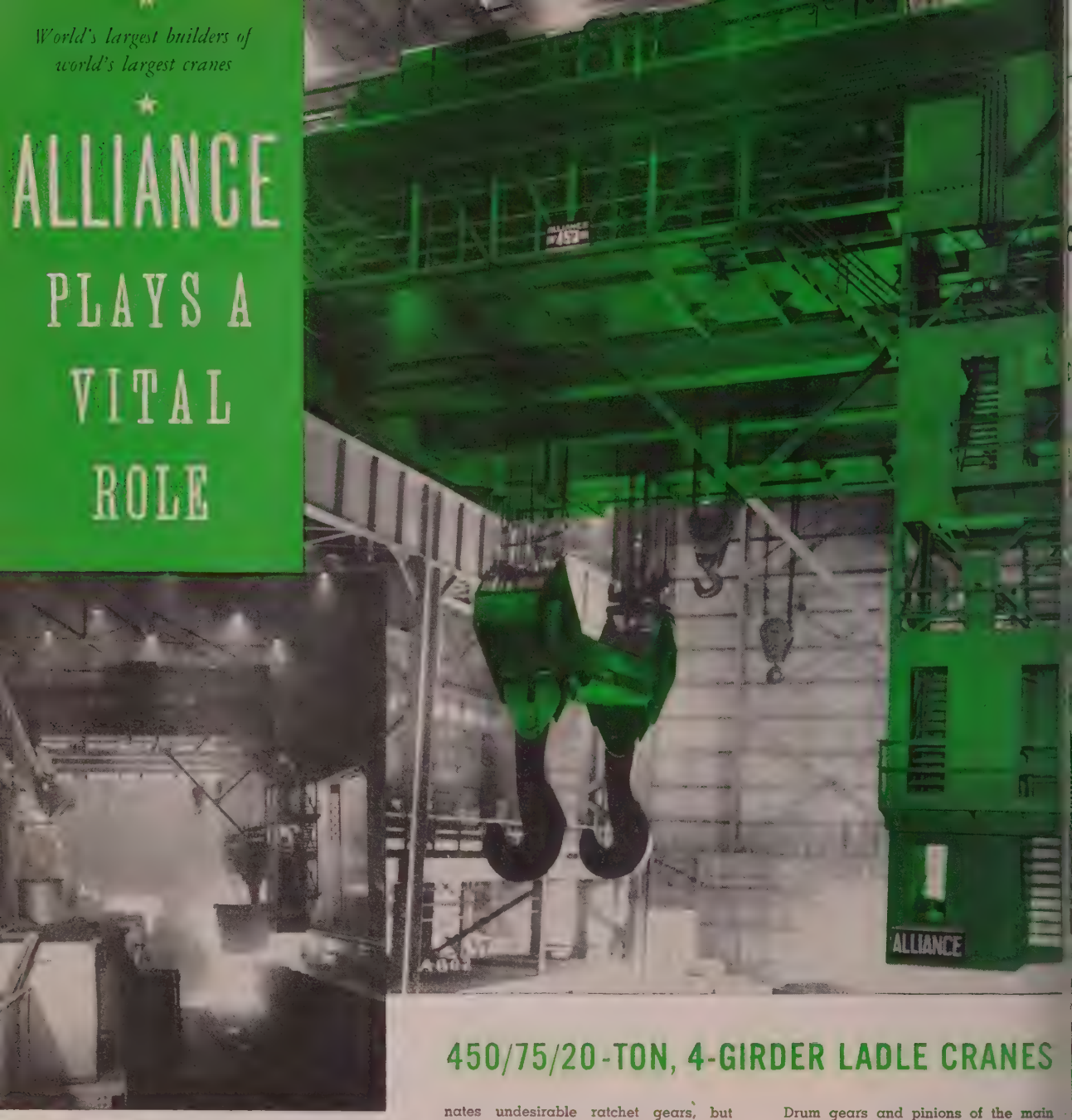
Los Angeles 58

World's largest builders of world's largest cranes

ALLIANCE PLAYS A VITAL ROLE



450/75/20-TON, 4-GIRDER LADLE CRANES

When the engineers from the Construction Engineering Bureau of the United States Steel Corporation were in the market for the world's largest ladle cranes for Fairless Works, they consulted The Alliance Machine Company, whose experience and know-how qualified them for this important task.

One of the cranes Alliance designed, which is now operating in the Fairless Works, is this 450-ton ladle crane. Having a 69'6" span, this crane is equipped with a 2-motor, synchronized worm drive and double-drum interlocked type main hoist. The synchronizing shaft employed in the gearing scheme not only eliminates undesirable ratchet gears, but makes possible an additional safety feature in case one hoist motor fails. Under this condition, both worms are driven by the remaining motor. All gearing functions continue as though operated with two motors. In case of hoist motor failure on the conventional drive **without** the synchronizing shaft, hoisting is accomplished by **only one** set of gears, thus imposing a double load on active gearings, as the second drum is then driven through interlocking drum gears.

Hoist gearing is so proportioned that full crane capacity can be lifted by one motor without exceeding the quarter-hour rating.

Drum gears and pinions of the main hoist have precision-cut, single-helical teeth. This feature, in cooperation with the worm drive, provides vibrationless operation on either high- or low-speed hoisting and lowering.

All gears of this new Fairless Works crane are fully enclosed and operate in a bath of oil, assuring long life and low maintenance. The 4-part safety rope system affords the highest degree of safety in rope reeving.

This crane is equipped with a 5-story cab, the operator's compartment being air-conditioned.

Consult Alliance Machine Company engineers when you have a heavy material handling problem.

THE Alliance MACHINE COMPANY

MAIN OFFICE
ALLIANCE, OHIO

PITTSBURGH OFFICE
1622 OLIVER BUILDING, PITTSBURGH, PA.

On Display at the Machine Tool Shows

rilling, Boring Machine

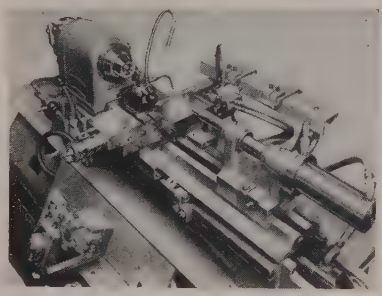
Because of higher spindle eeds, a faster indexing mechism, a new screw feed works id simplified controls, the Type " Mult-Au-Matic provides greatproductive capacity than previs models.

Appearance has been greatly imoved. Parts that were exposed e integrated within the machine, eliminate safety hazards. Two achines of this type will be exoited—a 10-in. (12 spindle) and 14-in. (eight spindle). The 14- model will feature an automatloading device. Bullard Co., idgeport, Conn. (Amphitheatre oth 1213)

ydraulic Tracer Lathe

Designed to machine small parts single or production quantities, is machine has an 11-in. swing d 13-in. carriage travel. Center--center distance is 17 in. Duplitor crossfeed is 1½-in.

The spindle is driven by a counrshaft clutch brake assembly dened for instant starts and stops. e lathe has an air-operated col-



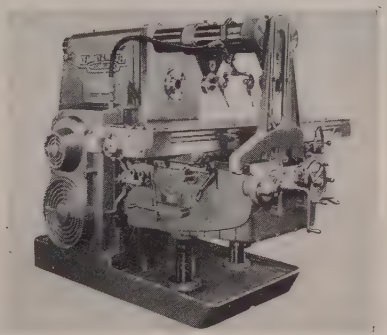
let closer and tailstock. Elgin Tool Works Inc., Chicago 13, Ill. (Coliseum Booth 320)

All three Chicago shows will run from Sept. 6 through Sept. 17. All will be closed Sunday, Sept. 11. The Machine Tool Show at the International Amphitheatre will be open from 10 a.m. to 5:30 p.m. daily. The Production Engineering Show at Navy Pier will be open from 1 to 10 p.m. daily, but will close at 6 p.m. on Sept. 17. The Coliseum Machinery Show will be open from 10 a.m. to 10:30 p.m. daily, but will close at 6 p.m. on Sept. 17.

Heavy-Duty Mills

This line of machines, designated the TK series, is offered in plain and vertical styles and in four sizes—20-hp, No. 3; 30-hp, No. 4; and 50-hp, Nos. 5 and 6. The machines feature twin screws for knee movement and support. The screws are precision ground and enclosed within telescopic tubes.

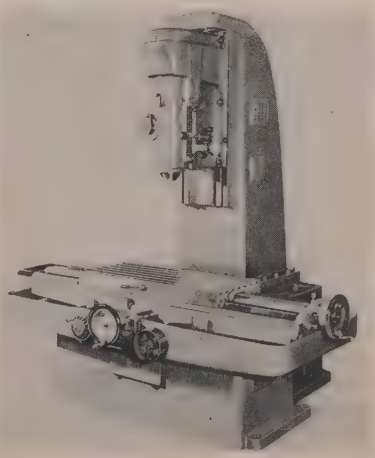
Other features: Controls are grouped at front of the machine; all-steel table with four T-slots; large, heavy knee of ribbed, box-type construction; broad, heavy column, face with square wraparound ways; hydraulic locking of spindle speed and spindle reverse controls while spindle is in motion.



Feed selection is offered in 32 changes from ⅜ to 90 ipm. Spindle speeds offer 24 changes from 13 to 1300 rpm. (A plain style, No. 5, 50-hp machine is shown.) Kearney & Trecker Corp., Milwaukee 14, Wis. (Amphitheatre Booth 508)

Vertical Boring Machines

The Autometric is available in No. 3 and No. 4 sizes. Both models feature precision measuring by dual screws for saddle and table.

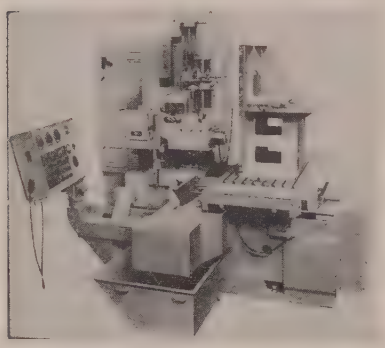


One screw is used for drive and the other for measuring. A dial indicator graduated in ten thousandths of an inch facilitates exact positioning.

The Autometrics have an adjustable sliding head with 10 in. of vertical travel and 11 in. of quill adjustment. Quill feed rate range on both machines is 0.0005 to 0.0148 in. No. 3 machine has a 50 to 2500 rpm speed range; No. 4 has a 40 to 2000 rpm speed range. Kearney & Trecker Corp., Milwaukee 14, Wis. (Amphitheatre Booth 508)

Tracer-Controlled Mill

Designed for heavy-duty milling, the BL Keller machine has spindle power of 10 hp and speeds from 30 to 3600 rpm in 20 steps. Large workpieces can be accommodated with the 36-in. horizontal travel, 22-in. vertical travel and 12-in. transverse travel. The table working surface is 48 x 30 in.



Slides have phenolic-to-metal bearing surfaces. Lead screw nuts are phenolic molded. An automatic one-shot system insures quick, positive lubrication of all important sliding surfaces. The machine has automatic chip removal. Pratt & Whitney, Division Niles-Bement-Pond Co., West Hartford 1, Conn. (Amphitheatre Booth 1219)

All Steel Press Brakes

The 2-30 series has a capacity of 30 tons and will bend 6 ft of 14-gage mild steel. The 3-50 series (shown) has a capacity of 50 tons and 6 ft of 10-gage mild steel. Both machines have front controlled variable speed drive, 20 to 50 strokes a minute.

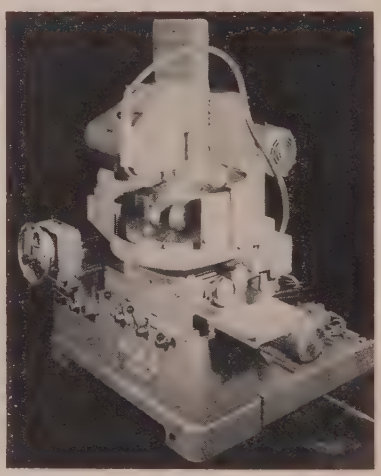
The 2-30 series has a 2½-in. stroke, 4-in. manual ram adjustment and a 9-in. gap. The 3-50 series has a 3-in. stroke, 5-in. power adjustment to the ram and a 12-in. gap.

Other press brakes to be shown will be the 9-115 series with capacity of ¼-in. x 10-ft mild steel; 900-ton machine with capacity of 1-in. x 12-ft mild steel. Cincinnati Shaper Co., Cincinnati 25, O. (Amphitheatre Booth 1105)

Rotary Surface Grinder

Model 361, a 24-in. chuck machine, has the rugged construction and power essential for big work or heavy stock removal. A double pump system on this hydraulic model insures little heat generation, making for greater accuracy.

The unit is furnished with plain or automatic cycle; both types are

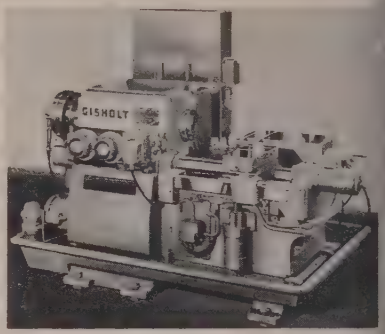


equipped with power vertical feed and power vertical traverse for the wheelslide. Swing inside the chuck guard is 28 in. Vertical capacity (from the top of the chuck to the center of the wheel) is 17½-in. maximum. Heald Machine Co., Worcester 6, Mass. (Amphitheatre Booth 902)

Automatic Lathes

No. 12 Automatic (shown) has handling, gaging, tool setting and other features required for automatic operation.

No. 24 Automatic has pushbutton control for loading and unloading from conveyors. It cycles automatically and features integral chip disposal equipment.



Also shown will be the No. 12 vertical and horizontal lathes for single spindle chucking and the Simplimatic machine. Gisholt Machine Co., Madison 10, Wis. (Amphitheatre Booth 1413)

Multicycle Lathe

The Model 14, single-point production machine is equipped with a two-position turret. Rough and semifinish cuts can be taken with

a roughing tool and a finish cut with a finishing tool in one automatic cycle. Shoulder facing tools carried on the front carriage are operated independently.

The lathe has a 40-hp spindle drive motor. Head is of the transmission type, with automatic speed

Special Qualities

all sheet metal work...

WEIRTON GALVANIZED STEEL

Whether it's complicated work for a special purpose or an everyday duct job, there's a Weirton galvanized steel to help you do it quicker—and better. Weirton's close control of quality through every step of the production process is carefully planned—and faithfully executed—to assure a tight coat that forms readily, looks better, and resists both peeling and flaking.

So when the job calls for galvanized steel, call Weirton and be sure. Let their experience serve you and your customers—to your profit.

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Weirton, West Virginia

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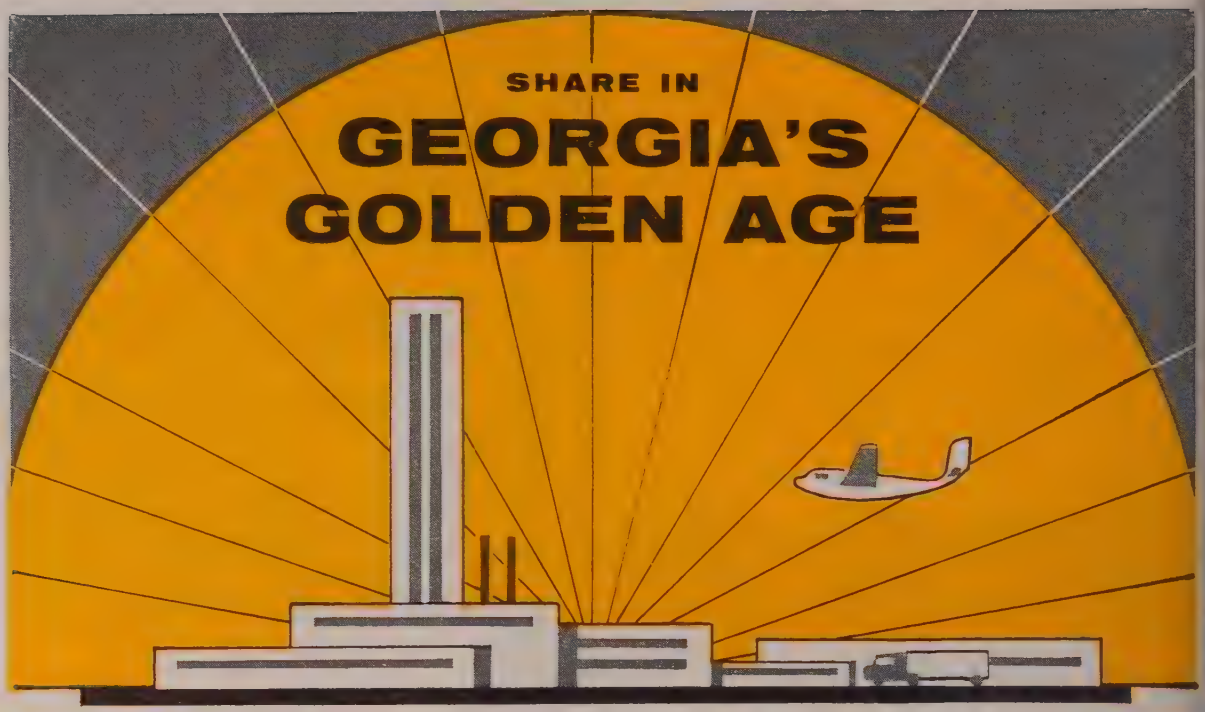

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...you, too, will find that it's good business to produce in Georgia. Over 7100 manufacturers, including many of America's greatest industrial names, have already staked their claims to share in Georgia's Golden Age. Georgia—scene of America's first gold rush in 1828, today offers many nearby, growing consumer markets to sales-minded industries...

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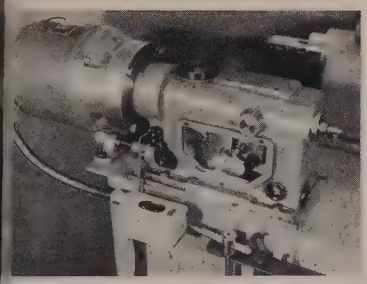
GEORGIA DEPT. OF COMMERCE

SCOTT CANDLER, SECRETARY • 100 STATE CAPITOL • ATLANTA, GEORGIA

unges. The turning carriage is unted on vertical ways, which surfaced with hardened and ound wear strips. Dynamic and ctric braking for all slide move- nts provide accurate position- . Sundstrand Machine Tool Co., ockford, Ill. (Amphitheatre oth 1412)

am Drill Unit

UT-O units are used singly or multiples on production jobs. any position—horizontally, ver- ally or angularly—they drill, am, tap or mill. Each unit is f-powered.



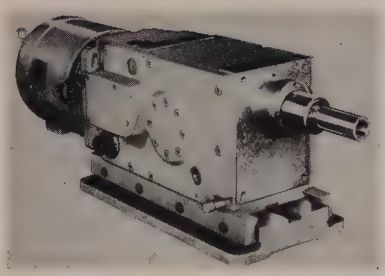
The UT-O drills up to ⅜-in. in eel, has a 2⅜-in. stroke and 9/16-in. depth adjustment. indle speed is 300 to 5400 rpm. gar Tool Inc., Cleveland 23, O. oliseum Booth 461)

rilling, Tapping Heads

Two cam-feed drilling units and wo cam-feed tapping units feature ncreased strokes, automatic lubri- ation and an auxiliary cam lever or operating sequence controls air valves or microswitches) and ttachments. Feed drive is through friction safety clutch. Speed and eed changes are made by pick-off ears. Tripping and synchronizing an be pneumatic or electric.

The model 4 drill unit has 750 o 8200 rpm spindle speeds, 4-in. troke and is powered by a ½-hp 600 rpm or 1-hp 3600 rpm mo- or. The model 16 drill unit has 96 to 3500 rpm spindle speeds, 5- n. maximum stroke and a 1½-hp, 800 rpm motor.

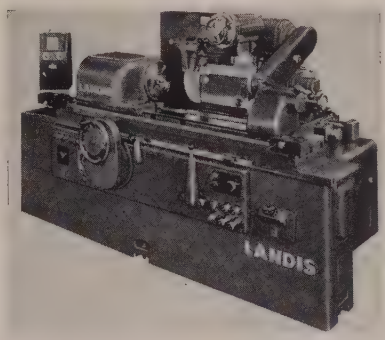
Model 5 tapping unit has spindle peeds of 500 to 2732 rpm, maxi- mum stroke of 4 in. and a ¾-hp, 200 rpm reversible motor. Mod-



el 17 (shown) has 388 to 2880 rpm spindle speeds, 5-in. stroke and a 1-hp, 1200 rpm reversing motor. Kingsbury Machine Tool Corp., Keene, New Hampshire. (Amphitheatre Booth 915)

Universal Grinder

Speeds from 60 to 360 rpm are provided in the headstock of the 12 x 36-in., type-K universal cylindrical grinder. All of the many grinding requirements can be met by swivelling the wheel head. This slides on a ground "V" and flat way to provide accurate response to the feed mechanism.



A hydraulically operated work carriage rides on hand scraped bed ways. Traverse speed is 3 to 250 ipm. Controlled deceleration and acceleration at the start, stop and reversal of the carriage assure smooth, uniform operation. Landis Tool Co., Waynesboro, Pa. (Amphitheatre Booth 1117)

Circular Saw Sharpener

Alternating high and low teeth can be ground with one setting on the G-45 machine. It sharpens blades from 8 to 45 in. in diameter. The high tooth is chamfered on either side, and the following tooth is square. The narrow tooth roughs out the center and the wide tooth finishes the cut.

Grinding contour is automatically produced by cam action, with index plates controlling the tooth spacing. Varying diameters, thicknesses, rake angles and pitches can be ground. Motch & Merryweather Machinery Co., Cleveland 13, O. (Amphitheatre Booth 606)

Vertical Rotary Table

With this 48-in. table, the inspection of large, heavy workpieces can be done with speed, ease and accuracy. It can be used to provide precise work location on heavy equipment for boring, facing and other machining operations.

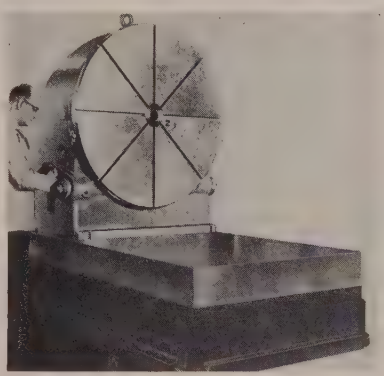


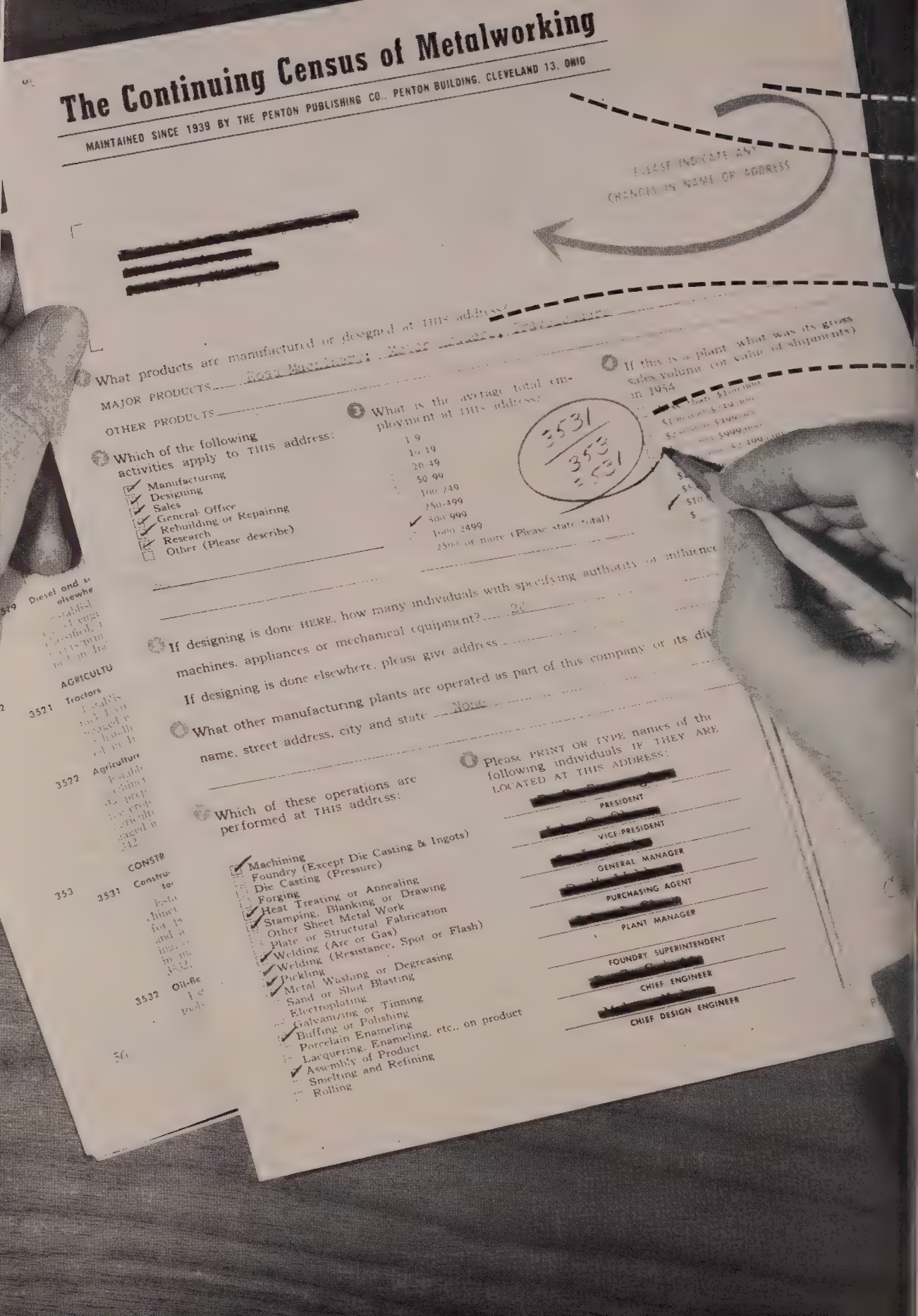
Table dial graduations read direct to 1 minute of arc. Vernier graduations read direct to 2 seconds. Fast power rotation in either direction is provided by a ¾-hp reversible motor.

Also to be shown: A 42-in. precision rotary table that automatically positions work to any angle by means of easily set dogs; and a 24-in. plain optical rotary table for inspecting, calibrating and use with jig borers and similar equipment. Pratt & Whitney, Division of Niles-Bement-Pond Co., West Hartford 1, Conn. (Amphitheatre Booth 1219)

Turret Lathe

Designed for efficient production of duplicate parts, this 13-in. machine can be equipped with chucks or fixtures for machining castings or forgings, or with collet atttachment and pneumatic stock feed for making parts from bar stock or tubing. Maximum swing over bed is 13⅛-in., over double tool cross slide, 3 7/16-in.

Maximum capacity through spindle is 1⅜-in. and maxmium collet capacity is 1-in. round. The hexa-


The Continuing Census of Metalworking
MAINTAINED SINCE 1939 BY THE PENTON PUBLISHING CO., PENTON BUILDING, CLEVELAND 13, OHIO
PLEASE INDICATE ANY CHANGES IN NAME OR ADDRESS
What products are manufactured or designed at THIS address?
MAJOR PRODUCTS
OTHER PRODUCTS
Which of the following activities apply to THIS address:
Manufacturing
Designing
Sales
General Office
Rebuilding or Repairing
Research
Other (Please describe)
What is the average total employment at THIS address?
1-9
10-19
20-49
50-99
100-249
250-499
500-999
1000-2499
2500 or more (Please state total)
If this is a plant what was its gross sales volume (or value of shipments) in 1954
3531
353
3531
If designing is done HERE, how many individuals with specifying authority or influence
machines, appliances or mechanical equipment?
If designing is done elsewhere, please give address
What other manufacturing plants are operated as part of this company or its div
name, street address, city and state
None
Which of these operations are performed at THIS address:
Machining
Foundry (Except Die Casting & Ingots)
Die Casting (Pressure)
Forging
Heat Treating or Annealing
Stamping, Blanking or Drawing
Other Sheet Metal Work
Plate or Structural Fabrication
Welding (Arc or Gas)
Welding (Resistance, Spot or Flash)
Pickling
Metal Washing or Degreasing
Sand or Shot Blasting
Electroplating
Galvanizing or Tinning
Buffing or Polishing
Porcelain Enameling
Lacquering, Enameling, etc., on product
Assembly of Product
Smelting and Refining
Rolling
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how PENTON's use of S.I.C. adds to the effectiveness of your advertising

et's start with the PENTON market ques-onnaire.

's been standard practice with us to conduct Continuing Census for use in our publishing perations. (Incidentally, we were the first ndustrial publisher to start this over 15 ears ago.)

Notice how a company reports to us on the major products manufactured, as well as any other products made at this location.

We then translate this into S.I.C. code numbers or proper classification on IBM cards. The S.I.C. or Standard Industrial Classification* system was developed by the U. S. Bureau of the Budget. It is, by far, the most acceptable method in use today for classifying manufacturing plants by product categories and represents a major forward movement in marketing to industry.

PENTON looks upon unit coverage as the first essential in measuring how effectively a publication reaches its market. We use S.I.C. not merely as a filing system, but as the basis for effectively *matching* publication coverage to the number of worthwhile establishments in the market.

You benefit in many ways from our use of S.I.C. When you use a PENTON publication you know that you're covering the highest possible proportion of the worthwhile units in the market. You can see this in our modern method of reporting circulation breakdowns by S.I.C. classifications. It tells you how many plants are reached and how many copies go into these plants.

Using this information to buy space helps you add to the *effectiveness* of good advertising.

*All manufacturers use this system in reporting to the U. S. Bureau of the Census.

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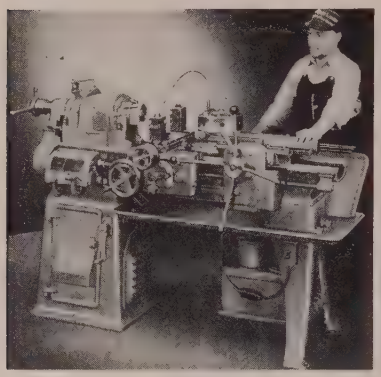
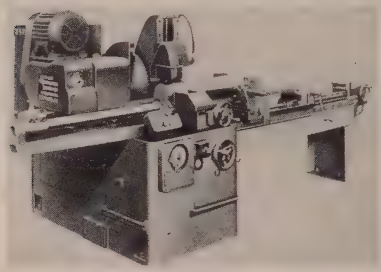
gon turret has tool holes 1-in. in diameter. Effective feed of the turret slide is 6½-in. Friction clutch drive on the universal carriage gives 48 power longitudinal feeds,



from 0.0015 to 0.0841 in. All feed changes are made through a quick change gearbox. South Bend Lathe Works, South Bend 22, Ind. (Coliseum Booth 543)

Circular Sawing Machine

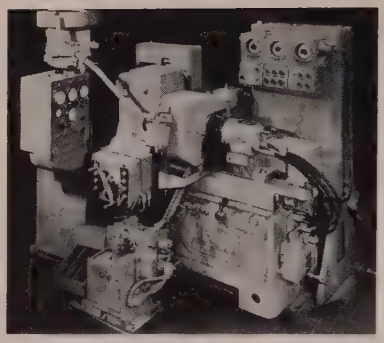
The No. 2-8-A cuts all solid and structural shapes up to 8 in. round or square. Six spindle speeds by gear change reduce setup time and increase the convenience, speed and safety of operation. Drive is by enveloping worm to helical pinion and spindle gear with provision for backlash take-up.



Vise, clamping and stock feed are designed for automatic, high-production metal cutting. Motch & Merryweather Machinery Co., Cleveland 13, O. (Amphitheatre Booth 606)

Internal Grinder

Model 170 is an end-loading, automatic chucking machine with a feedback system for self-adjusting grinding cycle. Feedback is initiated by air gaging in the unloading

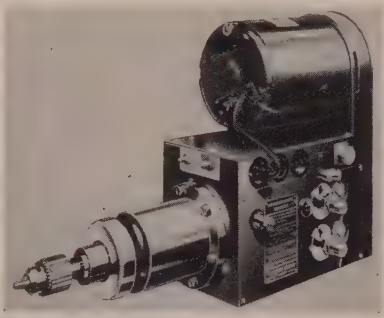


chute, which also sorts parts should an outsize bore be found.

Hopper feed with automatic orientation of the part is employed. Periodic wheel change is the only attention the unit requires—it shuts down automatically and flashes attention lights. Heald Machine Co., Worcester 6, Mass. (Amphitheatre Booth 902)

Automatic Drill Unit

The Series 24 is self-contained and operates on a low volume of air. Mounted by nose bracket, the units can be used in any combination—radial, vertical, opposed or angular.



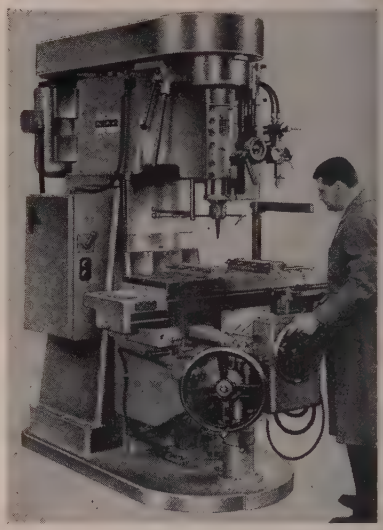
The head has ten spindle speeds, ranging from 440 to 7400 rpm. Driven by a timing belt, the unit is available with either a ½ or 1/3-hp motor with varying voltages. Chuck capacity ranges from No. 60 drill to ⅜-in. Dumore Co., Racine, Wis. (Navy Pier Booth 547)

Die Sinker

Designated the No. 32, this hand-operated machine is capable of handling heavy dies (within its table travel range, 14 x 24 in.) with ease. It is equipped with a duplicator for tracer control.

Spindle power is 3 hp. Drive is through a timing belt. The spindle speed range (30 to 1540 rpm in 16 steps) provides low speeds for large hub cutters, high speeds for small diameter cutters.

The knee is counterbalanced by a hydraulic cylinder in which pressure can be changed to balance the work load and to assist in raising the knee. Hydraulic mo-

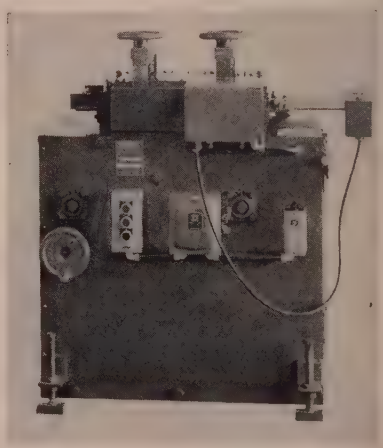


tors furnish variable-speed power feeds to the table and carriage. Pratt & Whitney, Division Niles-Bement-Pond Co., West Hartford 1, Conn. (Amphitheatre Booth 1219)

Straightening Machines

Straightening and feeding rolls are driven through an electric brake and clutch to provide automatic feeding of straight stock into a punch press or shear. A maximum of about 60 parts a minute may be obtained, depending on the length of feed.

Standard feed rates of the "R" series (an R10 model is shown)



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SQUARE D
TOTALLY ENCLOSED FEED-IN DUCT

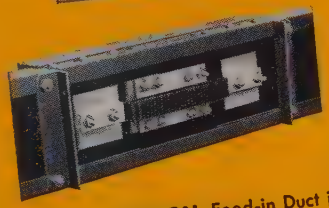
is the most efficient way to transmit large amounts of power. It provides the lowest known voltage drop—only 1.8 volts per 1000 amperes per 100 feet.

Exclusive design requires no ventilation—permits a totally enclosed, compact, dust-excluding enclosure. Rigid construction provides high resistance to heavy electrical stresses.

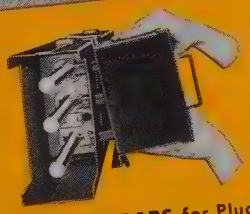
SQUARE D
EXPANSION CONNECTED PLUG-IN DUCT

provides flexible power distribution for branch circuits. Machinery can be rearranged quickly at minimum cost. Plug-in units can be attached at frequent intervals along the length of the duct, providing power where it's needed, when it's needed.

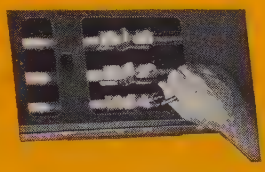
BUSWAY FEATURES PROVE DESIGN LEADERSHIP



NEW JOINT DESIGN. Feed-in Duct joint design saves installation time and reduces maintenance cost. Duct ends are identical—unnecessary to select mating ends before positioning or hanging duct sections. Outward-facing, pre-installed bolts permit rapid assembly and easy maintenance.



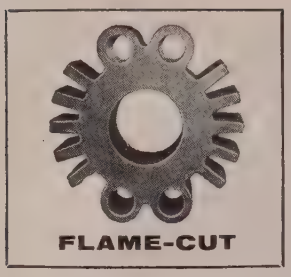
ROUND BUS BARS for Plug-in Duct provide greater mechanical strength and resistance to short-circuit stresses. Circuit breaker or fusible type plug-in units are easily installed at 2-foot intervals along both sides of the duct. Plug-in stabs grip the round bus bars with exceptionally high pressure.

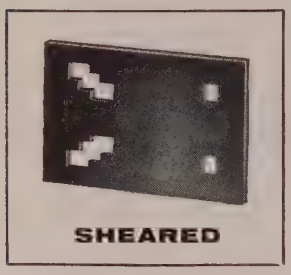


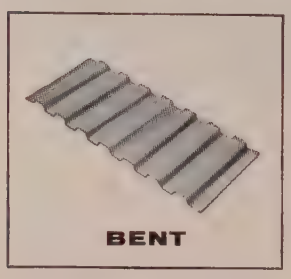
EXPANSION CONNECTORS of laminated copper join bus bars between sections—permit proper alignment, insure tight joints and provide for expansion and contraction at Plug-in duct joints. All bolt heads face outward for greater accessibility.

ASK YOUR ELECTRICAL DISTRIBUTOR FOR SQUARE D PRODUCTS

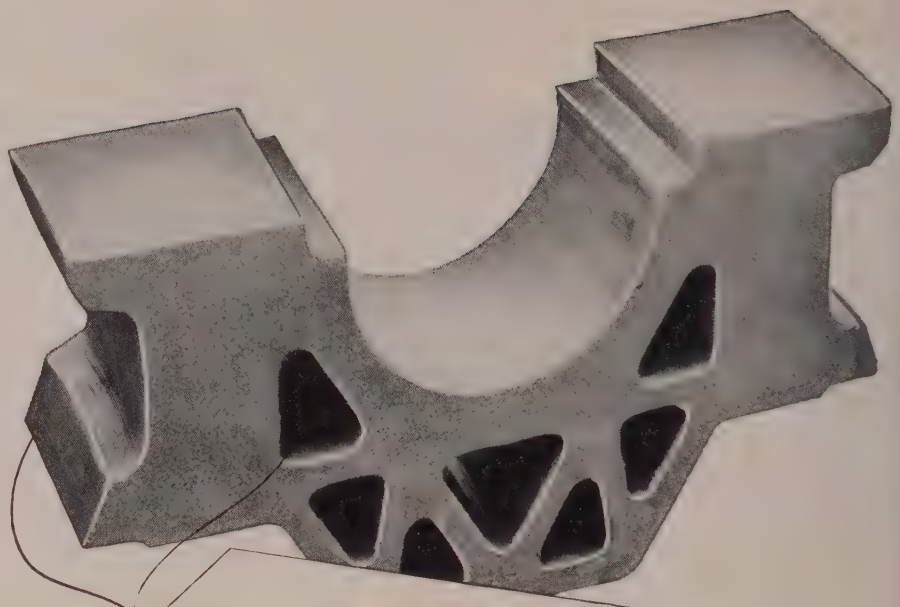
SQUARE D COMPANY







LUKENS



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STEEL PLATE SHAPES SERVICE

BY-PRODUCTS STEEL CO.

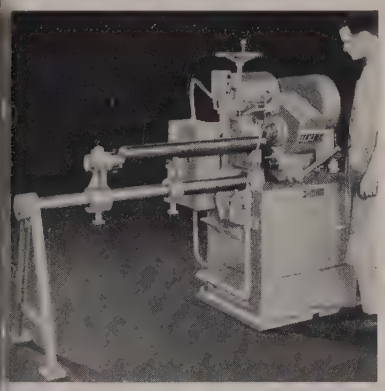
A Division of Lukens Steel Company, Coatesville, Pennsylvania

ange from 18 to 95 fpm; the "S" eries, from 20 to 105 fpm. Maximum width capacities of the "R" eries is 10, 15 and 20 in.; and "S" eries, 10, 15, 20, 24 and 30 in.

All machines have seven traightening rolls and four pinch olls. Pinch rolls and the four ower straightening rolls are pow- r driven. Rowe Machinery & Mfg. Co. Inc., Dallas, Tex. (Navy Pier Booth 179)

Milling, Centering Unit

Designed for the steel stockroom or lathe department for small-lot shaft work, the single-end Centermill automatically maintains a definite relation between ends and centers. It isn't necessary to rechuck work between milling and centering.

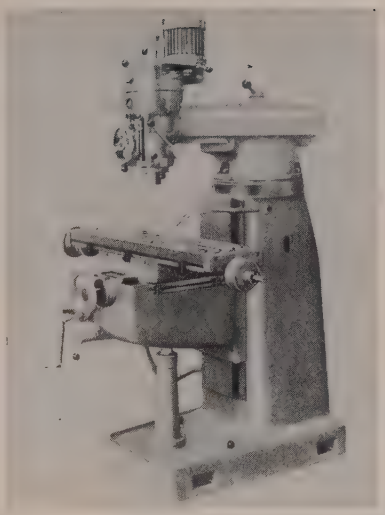


Work capacity: ¾ to 3½-in. diameters, 5 to 48-in. lengths. Feed rate is 1 to 18 ipm. Extra equipment includes coolant pump and piping, power feed to center drill and power clamping. Sundstrand Machine Tool Co., Rockford, Ill. (Amphitheatre Booth 1412)

Vertical Milling Machine

Model H, turret-type machine has a back-geared head with geared automatic power feed for the spindle in both directions. The all-angle head has 5½-in. of automatic spindle travel and automatic trip-out. Spindle speeds are 110 to 2720 rpm or 264 to 4100 rpm with a 1.2-hp motor.

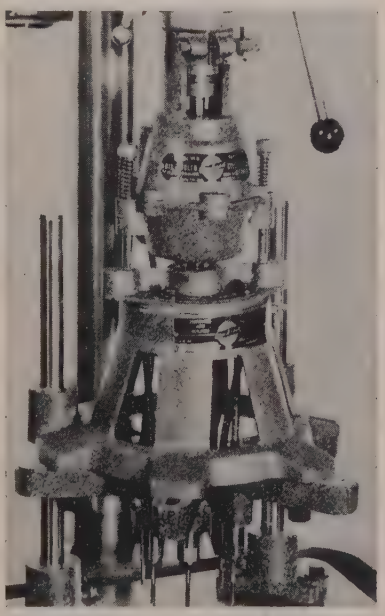
The mill can be used for precision jig boring to 0.0001 in., tool and die work and certain production work. It has an extra heavy



frame, knee, turret and ram. The dovetail overarm eliminates realigning the spindle after movement of the head. Graham Machine Tool Co., New York 12, N. Y. (Coliseum Booth 425)

Tapping, Drilling Heads

Models 600 and 800 flex-shaft spindle multiple heads offer a wider range of settings than usual geared types. Model 600 (shown) has two to six spindles; model 800 has two to eight spindles.



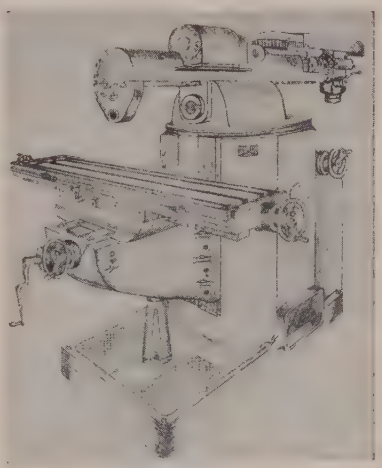
Spindle adjusting arms, held in place by adjusting and locking nuts, can be moved in and out or transversely for accurate positioning while the unit is operating. Jig-bored templates and spindle assemblies can be supplied in place of adjusting arms where a fixed center setup is desired.

Maximum drill or tap capacity is 5/16-in. Maximum bolt circle is 6⅞-in. for the model 600 and 8 13/16-in. for the 800. Ettco Tool Co. Inc., Brooklyn, N. Y. (Navy Pier Booth 527)

Versatile Mill

Horizontal, vertical, angular and universal milling may be done on the Quartet, a No. 2 floor-type machine. It is suited for tool, die and maintenance shopwork.

The Quartet is changed from a normal horizontal to a universal horizontal machine by swiveling the turret carrying the horizontal



spindle to the required angle. The position of the saddle and table need not be changed.

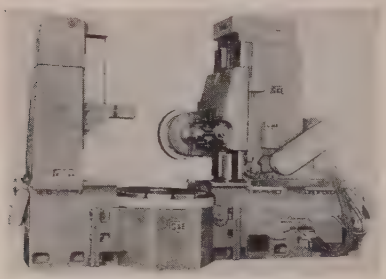
The mill is equipped with a rectangular overarm casting, on the rear of which is mounted a power-feed vertical milling head. Heavy duty, it is driven by an independent motor. To change the machine from horizontal to vertical operation requires indexing the turret 180 degrees to bring the vertical head over the table. U. S. Burke Machine Tool Division, Cincinnati, O. (Coliseum Booth 616)

Disc-Type Gear Cutter

The 72S machine is for rapid and economical production of large-diameter and coarse-pitch gears. It operates on the vertical cutting principle, with the stanchion adjustable for various diameter gears and depths of cut. An automatic cutting cycle includes

feed of cutter, its rapid return and indexing of work for each tooth.

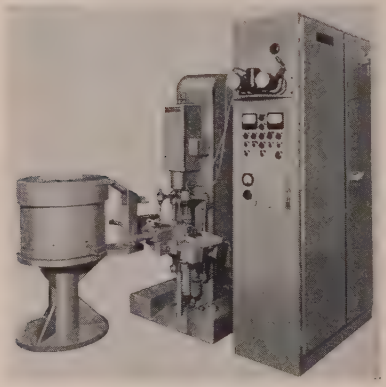
In addition to conventional downfeed, the machine is equipped with upfeed for climb cutting. It takes gears up to 90 in. in diam-



eter with support retracted, 50 in. with support in place. Face capacity is 30 in. Index range is from 12 to 400 teeth. Gould & Eberhardt Inc., Irvington 11, N. J. (Amphitheatre Booth 1424)

Honing Machine

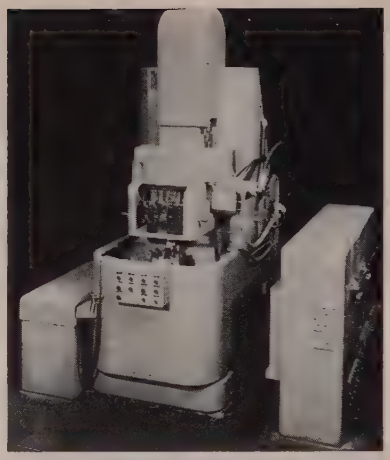
Model 111 is for high-production precision honing. It is equipped with air-electric hone expansion, Plugmatic bore-to-bore sizing, au-



tomatic loading and gaging equipment for checking and ejecting parts. Barnes Drill Co., Rockford, Ill. (Amphitheatre Booth 818)

Vertical Bore-Matic

The Model "S" accommodates work which is more readily loaded and machined in the horizontal plane. Vertical and horizontal slides traverse on hardened steel box-type ways which are force-feed lubricated. Vertical or angular, as well as horizontal slide unit mountings, are made possible be-



cause the table is gibbed down to the underside of the ways.

Hydraulic power units for the machine are compact and separate from the machine base, to reduce the problem of isolating heat and vibration. Heald Machine Co., Worcester 6, Mass. (Amphitheatre Booth 902)

Tapping Units

The Multi-Tapper is a self-contained, automatically reversing, multiple - spindle tapping head which can be used on any drill press. The unit taps from one to eight holes in any pattern.

The Pneumatic Tapper is an air-actuated, high-speed, single-spindle tapping head. The unit has high spindle speeds, fast approach, automatic tap reversal and quick withdrawal from the work. Commander Mfg. Co., Chicago 24, Ill. (Coliseum Booth 502)

Thread and Form Grinder

Model 134, which has a manually initiated automatic cycle, produces precision ground threads and forms on small parts. It can grind threads up to ½-in. in diameter. Maximum capacity be-

tween centers is 4 in.; maximum thread length is 3 in.

The grinding wheel can be formed by a Sheffield Crushtrue dressing device or by single point or multiribbed diamond dresser. An automatic wheel dresser compensator is incorporated in the machine. A Model 123 Micro-Form grinder for cylindrical work and circular form tools up to 8 in. in diameter and 8 in. long also will be shown. Sheffield Corp., Dayton, O. (Amphitheatre Booth 1305)

Power-Feed Rotary Table

Nearly any vertical or horizontal milling machine can be adapted for power circular milling or indexing with this 42-in. table. Self-contained with motor drive, the unit requires no feed connection to the milling machine.

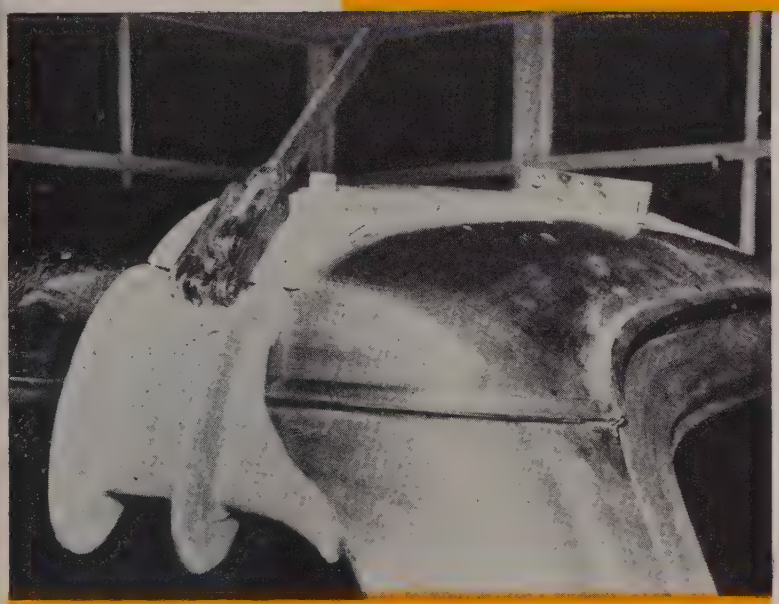
It is equipped for variable feed. T-slots are optional. With subplates, table diameter can be increased up to 60 in. Index plates and special electric equipment are available for out-of-ordinary applications. W. B. Knight Co., St. Louis 8, Mo. (Amphitheatre Booth 418)

Multiform Grinder

The Model 180 uses a 4-in. wheel which will take work up to 10 in. in diameter and 24 in. long. It features automatic wheel dressing; variable speed control (for automatic fast and slow feed of the wheel into the work); and an automatic plunge grinding device with 1-in. rapid approach and retraction of the wheel to the work. The wheel has cam controlled feed of 0.250-in.

Other features: Swivel work table, table locking device, circulating lubrication system for

Tooling time cut 50% with compounds based on BAKELITE TRADE-MARK Epoxy Resins



REZOLIN *Toolplastik* Compound was cast against a finished body to form this spot welding jig. Time: only 21 hours compared with 45 to 80 needed to make one of conventional materials. Based on BAKELITE Epoxy Resin, this tooling compound is produced by **Rezolin, Inc., Los Angeles 45, Calif.**

Now metalworking tools can keep up with fast model changes. Less time, lower costs result because BAKELITE Brand Epoxy Resins offer these advantages:

- **Liquid compounds—can be cast to shape without pressure**
- **Cured at room temperature—no applied heat**
- **Minimum shrinkage—minimum finishing**
- **Excellent flexural, compression, and impact strengths**
- **Outstanding dimensional stability**
- **Light weight means easy handling**
- **Laminated with glass cloth to form jigs, spotting racks, fixtures, and Keller models.**

For further information, write Dept. JU-172.

BAKELITE BRAND Epoxy Resins for Tooling

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In Canada: Bakelite Company, Division of Union Carbide Canada Limited, Belleville, Ontario
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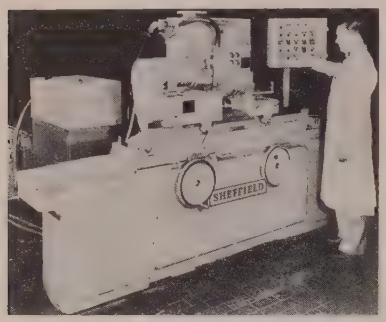
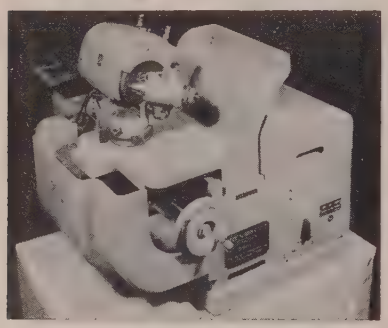
spindle, central lubrication system for all ways and annular table positioning device. A Model 190 precision annular form grinder for



rapid production of cylindrical forms also will be shown. Sheffield Corp., Dayton, O. (Amphitheatre Booth 1305)

Tool Sharpener

Direct reading dials on the Model 3 permit easy setting of angles and tool point radius. It grinds round and square tools. Swing of the tool holder is 150 degrees (included angle). A freehand grinding attachment can be used for extra large, flat or oddshaped tools.



The gearbox is enclosed in an oil-tight case. Improved smoothness of operation has been obtained through refined mechanical design as well as carefully worked out timing between reciprocation of the wheel and tool holder. Heald Machine Co., Worcester 6, Mass. (Amphitheatre Booth 902)

Vertical Hole Grinder

No. 2E grinds straight or tapered holes and radii. Speeds range from 4000 to 100,000 rpm. Table working surface is 22 x 44 in. The unit differs from conventional grinders in that the work is strapped to a table and does not revolve. The grinding wheel has a planetary motion about the vertical axis of the hole being ground and can be fed outward in an increasingly larger radius while the machine is running.

This feature, combined with fast, precise positioning of the table, makes it possible to accurately locate and grind any number of holes of various sizes without changing the setup.

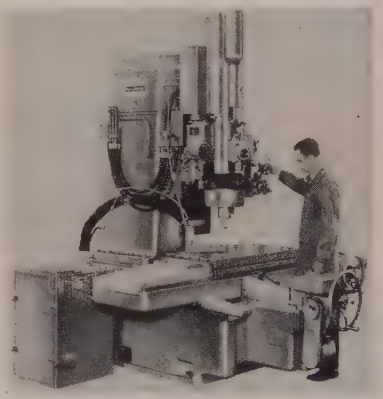
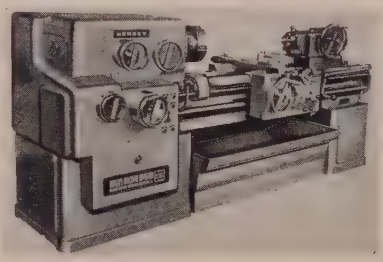


Table settings are accurate to 0.0001 in. Two independent Electrolimit measuring units—one for transverse and one for longitudinal settings—obtain basic 1-in. spacings electromagnetically from a solid master bar. Fractional settings are made by moving the unit between the basic settings by a micrometer screw. Pratt & Whitney, Division Niles-Bement-Pond Co., West Hartford 1, Conn. (Amphitheatre Booth 1219)

Geared-Head Lathe

The Hendey 32-speed lathe has a belt drive for the top eight speeds. This assures smoother finish and quieter operation at high speeds where power is not a primary requirement. The 24 lower speeds produce the power needed for heavy cuts.

The machine can be furnished

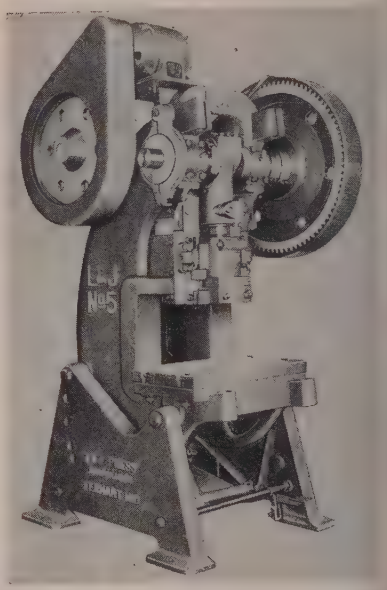


with maximum spindle speeds of 1000, 1500 or 2000 rpm. Positive braking of the spindle is provided. Two dial-type handwheels on the front of the headstock actuate the 32 speed changes.

Quick change threads per inch range from 2 to 120; feed range is from 0.0015 to 0.091 per revolution. Rated size of the lathe is 16 in.; swing over the ways is 18½-in. Hendey Machine Division, Barber-Colman Co., Rockford, Ill. (Amphitheatre Booth 221)

O.B.I. Punch Press

New frame design of the No. 5 press provides more rigidity in stress areas to minimize deflection under heavy loads. It is equipped with air clutch.

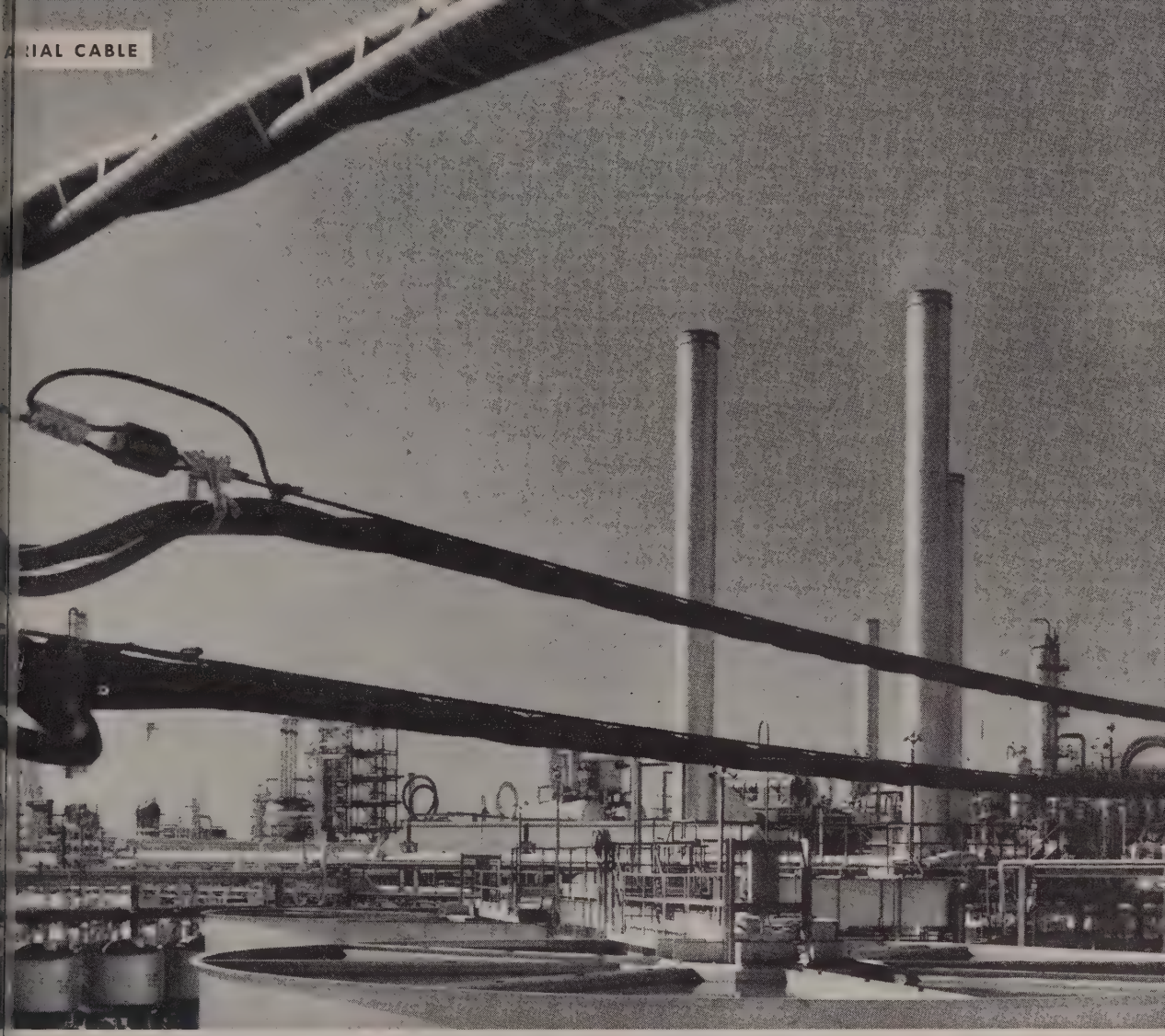


Of 56-ton capacity, it is available in both geared and nongeared models. L & J Press Corp., Elkhart, Ind. (Amphitheatre Booth 407)

Planer-Miller

Designed for fast metal removal, this 10-in. quill machine has four milling heads, each provided with 24 spindle speeds. Range is 9 to 500 rpm. Heads are powered by 50-hp motors.

The heavy section table is driven by a direct-current motor through a combination cone worm and wheel and double spur gear on rack arrangement. The drive can be adjusted for practically zero



NEITHER STORM NOR HEAT NOR CORROSION knocks out ANACONDA's 3-conductor 15kv self-supporting Aerial Cable—shown here at Shell Oil's modern new refinery at Norco, La.

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—with AnacondA Aerial Cable

When new power is needed or when old circuits must be replaced quickly and at low cost—more and more plants are turning to ANACONDA Aerial Cable.

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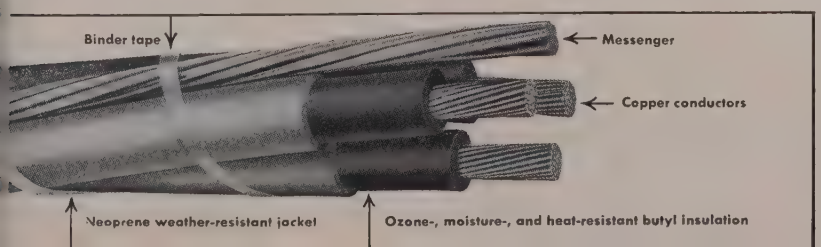
Today's finest aerial cable! Type AB butyl insulation gives ANACONDA Aerial Cable the finest performance record. For the full story, call the Man from Anaconda today. Or write: Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York. 55279



Ask the Man from

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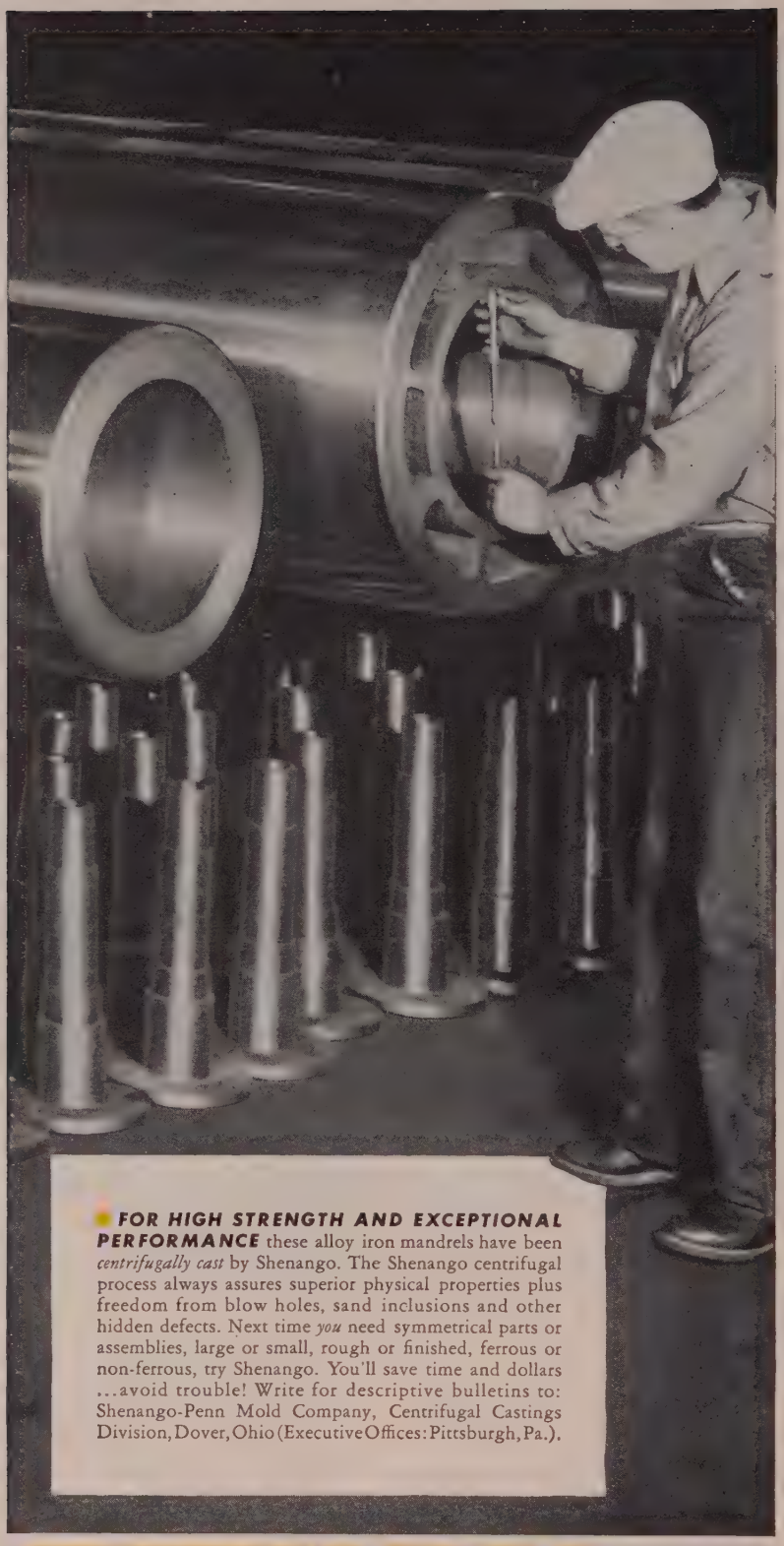
about your

High-voltage Aerial Cable


FOR HIGH STRENGTH AND EXCEPTIONAL PERFORMANCE these alloy iron mandrels have been centrifugally cast by Shenango. The Shenango centrifugal process always assures superior physical properties plus freedom from blow holes, sand inclusions and other hidden defects. Next time you need symmetrical parts or assemblies, large or small, rough or finished, ferrous or non-ferrous, try Shenango. You'll save time and dollars ...avoid trouble! Write for descriptive bulletins to: Shenango-Penn Mold Company, Centrifugal Castings Division, Dover, Ohio (Executive Offices: Pittsburgh, Pa.).
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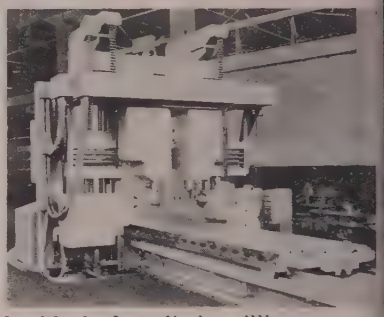
NEW PRODUCTS and equipment

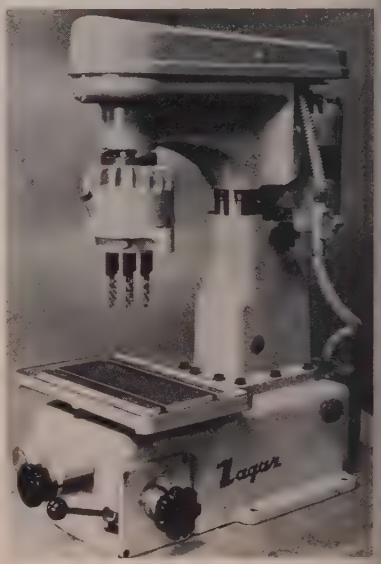


backlash for climb milling.

All auxiliary functions are controlled from a panel at the right side of the unit; operating functions are controlled from a portable pendant station. Giddings & Lewis Machine Tool Co., Fond du Lac, Wis. (Amphitheatre Booth 710)

Air-Oil Feed Drill

Used with the Zagar Gearless fixed-center drill head, this machine has a 5/16-in. diameter capacity and is particularly suited for high production of repetitive parts. Drive is by 1-hp motor. Cone-pulleys afford a choice of three speeds.



Head stock consists of a V-belt pulley, antifriction bearings and a quill mount for multiple spindle drilling heads. The Air-Oil feed mechanism, which has a rapid approach, a feed stroke and a rapid return, is housed in the base. Zagar Tool Inc., Cleveland 23, O. (Coliseum Booth 461)

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COMPLETE LINE OF ROEBLING

Galvanized

ROEBLING is a specialist in galvanizing with practically unmatched facilities for producing galvanized wire in enormous quantities and in complete size ranges. Hot galvanized is available in sizes from .283″ to .035″... Roegal (drawn galvanized) from .187″ to .005″.

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PHOTO BY MC MANUS

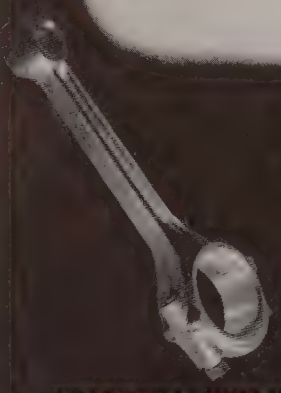
The man who needs a new machine tool and doesn't buy it is paying for it anyway...

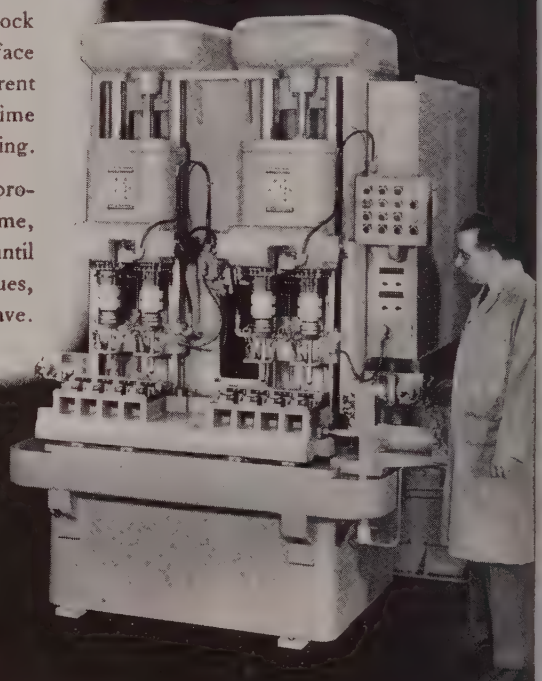
in lost production

Because costs are set largely in labor and burden, lost production is reflected directly in high unit cost. Old equipment is not the only cause. Failure to utilize the latest processing techniques may be keeping you from increasing production and lowering unit cost.

For example, consider the low-velocity, controlled-abrading Microhoning process which combines stock removal, geometric accuracy, size control and surface finish to increase *production* and *precision*. Inherent characteristics of Microhoning eliminate such downtime factors as tool sharpening, fixture and machine aligning.

The difference between your current output and the production possible with Microhoning will, in a short time, cover the cost of new Microhoning equipment. And until you do utilize the most efficient processing techniques, you are paying for new machine tools you don't have.





PART:
Connecting rod—wristpin and crankpin bores.

PROBLEM:
High unit cost; how to increase production without increasing labor or burden cost.

SOLUTION:
Microhoning—simplified processing of wristpin bore (eliminating 3 operations); gross production increased to 600 bores per hour, within all specified tolerances.

*MICROHONING = STOCK REMOVAL + GEOMETRY + SIZE CONTROL + SURFACE FINISH

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STEEL

September 5, 1955

Market Outlook

BY THE END of this month, the steel industry will have produced almost as much steel this year as it did in all of 1954.

The 1955 output through September should total 85.5 million net tons of ingots and castings. Last year's production was 88,311,652 tons.

CALCULATED— August's output was about 9.5 million tons. September should be a little better than that, probably 9.7 million. Add those two months to the aggregate for the first seven months—66.3 million tons—and you get 85.5 million tons. At the end of September last year, ingot production totaled 64,233,619 tons.

FASTER START— September started with the highest weekly ingot rate since the end of July—92.5 per cent of capacity. This is a 2.5 point rise over the preceding week. It reflects restoration of production in the flood-stricken East and cessation of a brief strike at a Detroit steel mill.

WORKING AHEAD— Steel demand is strong enough to prompt some mills to begin making preliminary allotments for the first quarter of 1956. Typical of the demands being made on producers: At one company the vice president of sales is spending most of his time explaining to customers when they can get steel. Among the inquirers are automobile company purchasing agents, who will increase their requirements of cold-finished carbon steel sheets in the fourth quarter.

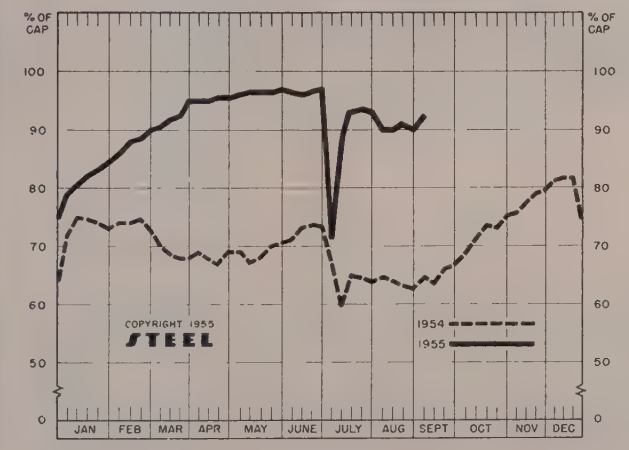
Also seeking steel are small successful bidders in the government's grain bin program. They continue to search unsuccessfully for galvanized sheets. Larger builders of bins have stocks and mill allocations which will enable them to build most of what they are committed to. The government hasn't called an emergency or indicated it would put pressure on mills to supply the needed material.

ADDED PRESSURE— Demand for structural steel will get even tighter than it is. Fabricators received orders in July for more material than ever before in a single month—366,853 tons. In June, they booked 318,150 tons. On top of this heavy demand are the rehabilitation needs in the flood-swept East. Fabricated structural steel prices are reported to be higher but not fully passing on the recent increases in cost of plain material and labor.

EXTENDED DEMAND— Another product required for construction—plates—is feeling the upturn in railroad and shipbuilding activity. Shipbuilding demands will extend into next year. Among Navy vessels that will take steel then are two nuclear-powered submarines.

NEW PRICES— New on the price front are quotations for the new chromium-nickel-manganese stainless steels—types 201 and 202. Developed for use in place of 301 and 302 to conserve nickel, they sell for as much as 2 cents a pound less. But they don't affect STEEL's price composite on finished steel. It remains at $127.41 a net ton. Also unchanged is STEEL's price composite on steelmaking scrap at $43.83 a gross ton. A producer of graphite and carbon electrodes, anodes and miscellaneous shapes raised prices 1.5 to 7 per cent.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended Sept. 4	Change	Same Week 1954	Same Week 1953
Pittsburgh	96.5	+ 1*	67	94
Chicago	96	+ 1*	67	97.5
Mid-Atlantic	94	+ 2	61	97
Youngstown	96	— 4	64	106
Wheeling	96	— 2.5	70.5	96
Cleveland	99	+ 1.5*	51	102.5
Buffalo	105	0	56	106.5
Birmingham	93.5	— 4.5	62	97
New England	72	+ 2*	51	83
Cincinnati	90.5	— 1.5	52	76.5
St. Louis	105	+ 1	56	95
Detroit	87.5	+ 19.5*	59.5	109.5
Western	101	0	78	102.5
National Rate	92.5	+ 2.5	64.5	95.5

INGOT PRODUCTION‡

	Week Ended Sept. 4	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	140.9†	136.1	130.6	94.6
NET TONS (In thousands)	2,264†	2,186	2,098	1,525

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,413,278 in 1955; 2,384,549 in 1954; 2,254,459 in 1953.

Metalworking Outlook—p. 35 Technical Outlook—p. 83

Price Indexes and Composites

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Aug. 30 1955	Aug. 23 1955	Month Ago	Aug. Average
(1947-1949=100)	153.9	153.9	153.9	153.9

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Aug. 30

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, Standard, No. 1	$4.800	Sheets, Electrical	$10.200
Rails, Light, 40 lb	6.217	Strip, C.R., Carbon	7.993
Tie Plates	5.625	Strip, C.R., Stainless, 430 (lb)	0.444
Axles, Railway	8.000	Strip, H.R., Carbon	5.350
Wheels, Freight Car, 33 in. (per wheel)	52.50	Pipe, Black, Buttweld (100 ft)	16.366
Plates, Carbon	4.950	Pipe, Galv., Buttweld (100 ft)	19.971
Structural Shapes	4.867	Pipe, Line (100 ft)	158.925
Bars, Tool Steel, Carbon (lb)	0.460	Casing, Oil Well, Carbon (100 ft)	165.120
Bars, Tool Steel Alloy, Oil Hardening Die (lb)	0.560	Casing, Oil Well, Alloy (100 ft)	244.670
Bars, Tool Steel, H.R., Alloy, High Speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.185	Tubes, Boiler (100 ft)	39.470
Bars, Tool Steel, H.R., Alloy, High Speed W 18, Cr 4, V 1 (lb)	1.680	Tubing, Mechanical, Carbon	20.980
Bars, H.R., Alloy	9.375	Tubing, Mechanical Stainless, 304 (100 ft)	180.952
Bars, H.R., Stainless, 303 (lb)	0.450	Tin Plate, Hot-dipped, 1.25 lb	8.533
Bars, H.R., Carbon	5.350	Tin Plate, Electrolytic, 0.25 lb	7.233
Bars, Reinforcing	5.313	Black Plate, Canmaking Quality	6.333
Bars, C.F., Carbon	8.660	Wire, Drawn, Carbon	8.575
Bars, C.F., Alloy	12.175	Wire, Drawn, Stainless, 430 (lb)	0.578
Bars, C.F., Stainless, 302 (lb)	0.468	Bale Ties (bundle)	6.473
Sheets, H.R., Carbon	5.145	Nails, Wire, 8d Common	8.618
Sheets, C.R., Carbon	6.239	Wire, Barbed (80-rod spool)	7.847
Sheets, Galvanized	7.690	Woven Wire Fence (20-rod roll)	18.635
Sheets, C.R., Stainless, 302 (lb)	0.588		

STEEL's FINISHED STEEL PRICE INDEX*

	Aug. 31 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	207.63	207.63	207.63	194.19	156.99
Index in cents per lb	5.625	5.625	5.625	5.261	4.253

STEEL's ARITHMETICAL PRICE COMPOSITES

Finished Steel, NT*	$127.41	$127.41	$127.41	$117.77	$94.50
No. 2 Fdry, Pig Iron, GT	58.99	58.99	58.99	56.54	46.85
Basic Pig Iron, GT	58.49	58.49	58.49	56.04	45.97
Malleable Pig Iron, GT	59.77	59.77	59.77	57.27	47.49
Steelmaking Scrap, GT	43.00	44.33	43.17	29.00	40.92

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130. †Revised.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point

FINISHED STEEL	Aug. 31 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.65	4.65	4.65	4.30	3.45
Bars, H.R., Chicago	4.65	4.65	4.65	4.30	3.45
Bars, H.R., deld. Philadelphia	4.90	4.90	4.90	4.55	3.93
Bars, C.F., Pittsburgh	5.90	5.90	5.90	5.40	4.10-4.15
Shapes Std., Pittsburgh	4.60	4.60	4.60	4.25	3.40
Shapes, Std., Chicago	4.60	4.60	4.60	4.25	3.40
Shapes, deld., Philadelphia	4.88	4.88	4.88	4.53	3.46
Plates, Pittsburgh	4.50	4.50	4.50	4.225	3.50
Plates, Chicago	4.50	4.50	4.50	4.225	3.50
Plates, Coatesville, Pa.	4.50	4.50	4.50	4.225	3.90
Plates, Sparrows Point, Md.	4.50	4.50	4.50	4.225	3.50
Plates, Claymont, Del.	4.50	4.50	4.50	4.225	3.90
Sheets, H.R., Pittsburgh	4.325	4.325	4.325	4.05	3.35
Sheets, H.R., Chicago	4.325	4.325	4.325	4.05	3.35
Sheets, C.R., Pittsburgh	5.325	5.325	5.325	4.95	4.10
Sheets, C.R., Chicago	5.325	5.325	5.325	4.95	4.10
Sheets, C.R., Detroit	5.325-5.425	5.325-5.425	5.325-5.425	5.10	4.30
Sheets, Galv., Pittsburgh	5.85	5.85	5.85	5.45	4.40
Strip, H.R., Pittsburgh	4.325	4.325	4.325	4.05	3.50
Strip, H.R., Chicago	4.325	4.325	4.325	4.05	3.25
Strip, C.R., Pittsburgh	6.317	6.317	6.317	5.75	4.15-4.50
Strip, C.R., Chicago	6.35-6.45	6.35-6.45	6.35-6.45	6.00	4.30
Strip, C.R., Detroit	6.35	6.35	6.35	5.60-5.90	4.35-4.95
Wire, Basic, Pittsburgh	6.25	6.25	6.25	5.75	4.50
Nails, Wire, Pittsburgh	7.60	7.60	7.60	6.85	5.30
Tin plate (1.50 lb), box, Pitts.	$9.05	$9.05	$9.05	$8.95	$7.50
SEMIFINISHED STEEL					
Billets, Forging, Pitts. (NT)	$84.50	$84.50	$84.50	$78.00	$63.00
Wire rods, ⅜-⅝" Pitts.	5.025	5.025	5.025	4.675	3.85
PIG IRON, Gross Ton					
Bessemer, Pitts.	$59.50	$59.50	$59.50	$57.00	$48.50
Basic, Valley	58.50	58.50	58.50	56.00	46.00
Basic, deld. Phila.	56.16	56.16	56.16	49.66	50.39
No. 2 Fdry, Pitts.	59.00	59.00	59.00	56.50	49.50
No. 2 Fdry, Chicago	59.00	59.00	59.00	56.50	46.50
No. 2 Fdry, Valley	59.00	59.00	59.00	56.50	46.50
No. 2 Fdry, deld. Phila.	59.66	59.66	59.66	50.16	50.89
No. 2 Fdry, Birm.	55.00	55.00	55.00	52.88	42.38
No. 2 Fdry (Birm.) deld. Cin.	62.70	62.70	62.70	60.43	49.08
Malleable, Valley	59.00	59.00	59.00	56.50	46.50
Malleable, Chicago	59.00	59.00	59.00	56.50	46.50
Ferromanganese, Duquesne	190.00†	190.00†	19.00†	200.00†	175.00*

75-82% Mn, gross ton, Etna, Pa. †74-76% Mn, net ton.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	$43.00	$44.50	$43.00	$29.50	$44.00
No. 1 Heavy Melt, E. Pa.	46.50	46.50	44.50	27.50	38.50
No. 1 Heavy Melt, Chicago	42.00	42.00	42.00	30.00	40.25
No. 1 Heavy Melt, Valley	46.50	46.50	46.50	32.50	43.75
No. 1 Heavy Melt, Cleve.	44.00	44.00	44.00	28.50	41.75
No. 1 Heavy Melt, Buffalo	39.50	39.50	39.50	26.50	39.75
Rails, Rerolling, Chicago	64.50	64.50	64.50	44.50	59.50
No. 1 Cast, Chicago	46.50	46.50	45.50	35.50	49.50
COKE, Net Ton					
Beehive, Furn. Connlsvl.	$13.625	$13.625	$13.75	$14.75	$14.25
Beehive, Fdry, Connlsvl.	16.50	16.50	16.75	16.75	15.50
Oven, Fdry, Chicago	25.75	25.75	25.75	24.50	21.00

Daily Nonferrous Price Record

	Price Aug. 31	Last Change	Previous Price	July Avg.	June Avg.	Aug. 1954 Avg.
Copper	40.00-43.00	Aug. 25, 1955	40.00	36.000	36.000	30.000
Lead	14.80	Oct. 4, 1954	14.55	14.800	14.800	13.846
Zinc	12.50	June 16, 1955	12.00	12.250	12.250	11.000
Tin	95.75	Aug. 19, 1955	95.875	97.045	93.668	93.332
Nickel	64.50	Nov. 24, 1954	60.00	64.500	64.500	60.000
Aluminum	24.40	Aug. 1, 1955	23.20	23.200	23.200	22.119
Magnesium	32.50	Aug. 16, 1955	28.50	28.500	28.500	27.000

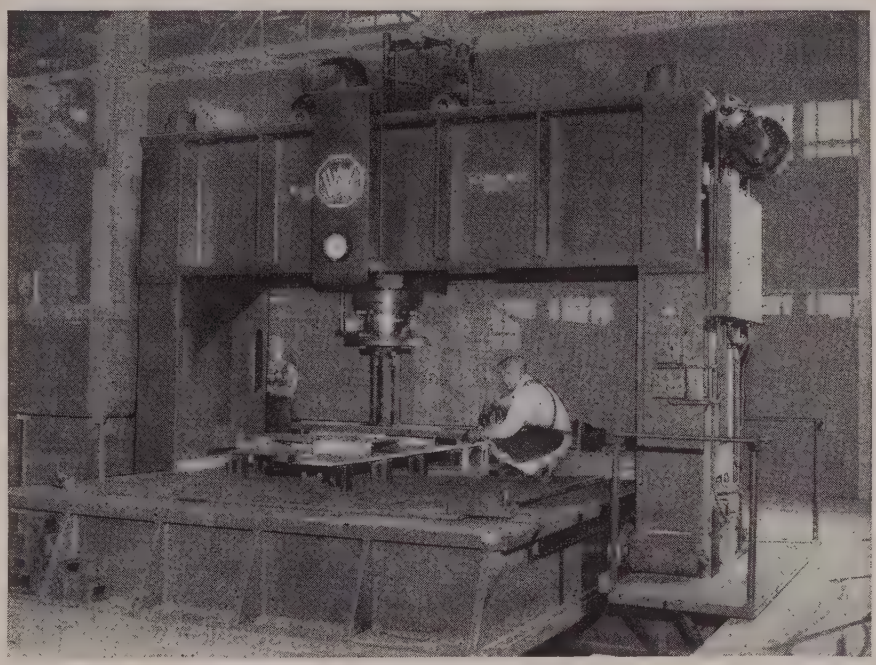
Quotations in cents per pound based on: COPPER, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary ingots, 99 + %, deld.; MAGNESIUM, 99.8%, Freeport, Tex.

What You Can Use the Markets Section for:

- **A source of price information.**
  Current prices are reported each week. Price changes are shown in italics. Price trends are shown in tables of indexes and comparisons.
- **A directory of producing points.**
  Want to know who makes something, or where it is made? The steel price tables alphabetically list the cities of production and indicate the producing company. If you are a buyer, you may want to make a map showing comparative distances of sources of supply and to help you compute freight costs. If you are a seller of supplies you can make a map to spot your sales possibilities.
- **A source of price data for making your own comparisons.**
  Maybe you want to keep a continuous record of price spread between various forms of steel. You can get your base price information from STEEL's price tables.
- **A source of information on market trends.**
  Newsy items tell you about the supply-demand situation of materials, including iron and steel, nonferrous metals and scrap. Other articles analyze special situations of interest and importance to you.
- **Reports on iron and steel production, and materials and product shipments.**

WILLIAMS-WHITE GANTRY PRESSES

for Large or Small Straightening Operations



e two presses shown illus-
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HITE hydraulic straighten-
presses.

WILLIAMS-WHITE Gantry
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erations as diversified as
aightening heavy plate or
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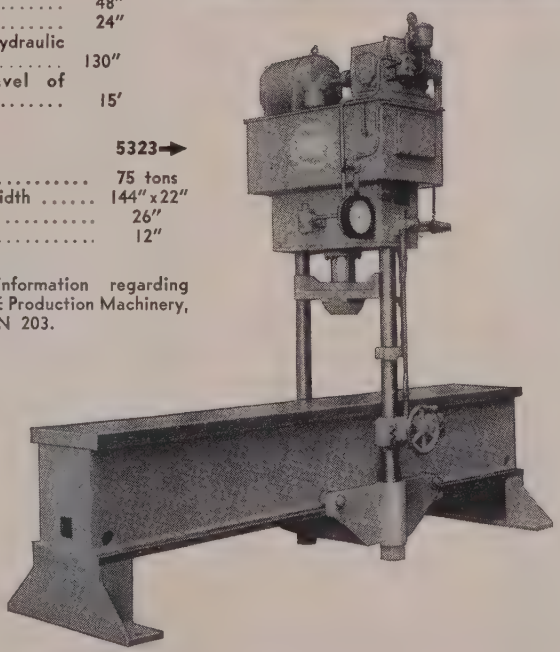
production bending and
aightening operations
notograph 5323).

	5500→
acity	400 tons
rking face of bed, R-L, -B	20′ x 13′
light, bottom of ram bed	48″
ke	24″
ss travel of hydraulic m	130″
gitudinal travel of antry	15′

	5323→
acity	75 tons
, length and width	144″x22″
light	26″
ke	12″

additional information regarding
LLIAMS-WHITE Production Machinery,
e for BULLETIN 203.



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Nonferrous Metals

The most recent price increase for copper did nothing to solve the three basic troubles of the industry: Short supply, higher world price and Chilean pressure

Nonferrous Metal Prices, Pages 124 & 125

WHETHER THEY LIKE IT or not, copper producers are caught in a merry-go-round of price increases that could do far more damage than just make them dizzy. Where it will end is just like asking how far is up.

This year so far has seen the price go from 30 to 36 cents to 40 to 43 cents a pound. Don't bet your last copper penny that it won't go up again. The latest increase has done nothing to change conditions which caused it.

Primary—First, it did not relieve the shortage of copper. No price increase can do that. Increased production or decreased consumption are the only answers. If the cost of the metal goes much higher, the latter may be the unwanted solution.

Second, the domestic price at 43 cents is no closer to the foreign market than it was at 40 cents or 36 cents. Each time American producers have upped their quotation, the London Metal Exchange has responded by going up. Last week, LME copper hit £400 a long ton, or the equivalent of 50 cents a pound in America. Up to that time, £400 had been considered the theoretical ceiling. Now it's anybody's guess how high pent-up demands will blow the ceiling.

Third, the new price has done little to ease pressure from Chile for better returns from the U. S. As long as the LME keeps ahead of the domestic price by 6 or 7 cents a pound, Chile will be unhappy about selling in the American market. In fact, as long as the outside market in the U. S. is above the producer's price, as it has been for several weeks, Chile will claim she is selling beneath existing domestic prices. That attitude already has resulted in drastic cuts in Chilean exports to this country and promises to make more cuts unless something happens to bring the two prices closer.

Domestic Problems—Outside its relation to the world market, the latest price increase has brought more groaning from the cost-conscious consumers of the red metal. Nobody knows what many of them will be willing to pay before they draw the line. Copper producers are the last ones who want to find out. That is largely why they have been unhappy about each boost since the days when 30 cents a pound looked so good to them. It is no secret that one reason Kennecott Copper Co. has been slow to follow the increases is because company officials honestly do not like to overprice; and at 43 cents a pound copper is way over-priced.

There is the chance that copper could price itself out of the market. On a weight basis, it is nearly twice the cost of aluminum. On a volumetric basis, nobody selling copper even likes to think of the cost comparison with the lighter metal. The only thing in copper's favor now is the supply problems facing aluminum. The market for the lighter metal is expanding so rapidly on its own merits that there isn't too much chance to woo markets away from other short-supply metals.

Patience—This is not sounding the death bell for copper—far from it. Over the long haul, there is enough copper to serve its markets and then some. Industrymen have been contending right along that the present shortage is only temporary and supply will eventually catch up with demand. The historic pattern of the industry indicates this is true. By midsummer of 1956, there could be more copper available than producers can sell. But to the little fellow who has been sweating it out for eight months, next year seems as far off as eternity.

If consumers can hold out until the balance comes, price should settle down to a level which most of them would be willing to pay. The increased cost of production as the result of this year's labor settlements would indicate something above the 30 cents prevailing when the merry-go-round started. Somewhere between there and 36 cents would be a good bet.

Government Helps Flood Victims

Meanwhile, the government is doing everything it can to relieve the shortage and the distress caused by the floods in the Northeast. Defense Mobilizer Arthur Flemming has postponed until June 30, 1956, delivery of 26,000 tons of copper to the national stockpile and Defense Production Act inventory. Producers are urged to funnel this metal to the Connecticut valley area to help rehabilitate industry. The 5700 tons originally scheduled by the Business & Defense Services Administration for defense users also has been freed for nondefense uses in the area. This is equal to about one-third of a month's normal production in the United States but it is expected to help hardship cases.

Aluminum Asks for Relief

Aluminum, too, may come in for some governmental help as the result of meetings held between officials of BDSA and the various aluminum advisory committees. The industry requested the government to restrict scrap exports to 1500 tons in the fourth quarter and to call for only token amounts of aluminum for the national stockpile during that quarter. The Aluminum Producers Industry Advisory Committee told BDSA that demand from American consumers this year will total 4.1 billion lb. Supply will lag behind that demand, even if this year's shipments to stockpile were included. If the primary producers can maintain a daily average of 8.5 million lb, U. S. production will come to around 3.1 billion lb. Add to that the 450 million lb coming in from Canada, and the total is only about 3.55 billion lb. The producers estimate that demand in 1956 will be about 4.7 billion lb. This is good fuel for the argument that the industry could use most of the expansion which is now in the planning stage.

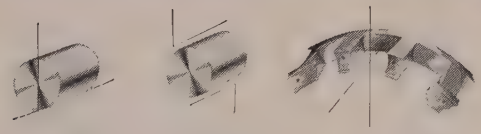
Nickel Gets Its Share

Nickel, not to be outdone, came in for a share of the government's generosity when Mr. Flemming approved the request of the assistant secretary of Commerce, Lothair Teetor, for an additional 1,250,000 lb of the metal for industry. This makes a total of 5,250,000 lb of nickel released by the government in the third quarter.

Brooks & Perkins Opens Branch

Brooks & Perkins Inc., Detroit, opened an office at 9441 Wilshire Blvd., Los Angeles, under the direction of Donald Bowers. The office will co-operate with Continental Metals Inc., the firm's Los Angeles distributor of magnesium sheet and plate.

right from every angle . . .



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Nonferrous Metals

Cents per pound, carlots, except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99 + %, ingots 24.40, pigs 22.50. 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 26.2; No. 43, 5% Si, 26.00; No. 142, 4% Cu, 1.5% Mg, 2% Ni, 27.80; No. 195, 4.5% Cu, 0.8% Si, 27.20; No. 214, 3.8% Mg, 27.7; No. 356, 7% Si, 0.3% Mg, 26.1.

Antimony: R.M.M. brand, 99.5%, 33.00, Lone Star brand, 33.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.00-28.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa., Elmore, O.

Beryllium Copper: 3.75-4.25% Be, $40 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa., or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb, deld.

Cobalt: 97-99%, $2.60 per lb for 550-lb keg; $2.62 per lb for 100-lb case; $2.67 per lb under 100 lb.

Columbium: Powder, $119.20 per lb, nom.

Copper: Electrolytic, 40.00-43.00 deld. Conn. Valley; 40.00-43.00 deld. Midwest; Lake 40.00-43.00 deld.; Fire refined, 39.75-42.75 deld.

Germanium: 99.9% $295 per lb, nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $90-$110 nom, per troy oz.

Lead: Common, 14.80, chemical, 14.90, corroding, 14.90, St. Louis. New York basis, add 0.20.

Lithium: 99%+, cups or ingot, $11.50; rod, $13.50; shot or wire, $14.50, f.o.b. Minneapolis, 100 lb lots.

Magnesium: 99.8%, self-palletizing pig, 32.50; notched ingot, 33.25, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., add 1.40 for pig and 1.45 for ingot; for Madison, Ill., add 1.20 for pig and 1.25 for ingots; for Los Angeles, add 2.00 for both pig and ingot. Sticks 1.3 in. diameter, 53.00, 100 to 4999 lb, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91C and alloys C, G, H and R, 36.00; alloy M, 38.00, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., add 1.40; for Madison, Ill., add 0.50; for Los Angeles, add 2.50.

Mercury: Open market, spot, New York, $253-$256 per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced, $3-$3.25 per lb; pressed ingot, $4.06 per lb; sintered ingot, $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 64.50; 10-lb pigs, unpacked, 67.65; "XX" nickel shot, 69.00; "P" nickel shot or ingots for addition to cast iron, 64.50; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: $80-$100, nom., per troy oz.

Palladium: $22-$24 per troy oz.

Platinum: $80-$90 per troy oz from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $118-$125 per troy oz.

Ruthenium: $45-$55 per troy oz.

Selenium: 99.5%, $9-$10 per lb.

Silver: Open market, 90.75 per troy oz.

Sodium: 16.50, c.l.; 17.00, l.c.l.

Tantalum: Sheet, rod, $68.70 per lb; powder, $56.63 per lb.

Tellurium: $1.75 per tb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot 95.75; prompt, 95.75.

Titanium: Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max), $3.95, grade A-2 (0.5% Fe max), $3.50 per pound.

Tungsten: Powder, 98.8%, carbon, reduced, 1000-lb lots, $4.50 per lb, nom., f.o.b. shipping point; less than 1000 lb add 15.00; 99+% hydrogen reduced, $4.65. Treated ingots, $6.70.

Zinc: Prime Western, 12.50; brass special, 12.75; intermediate, 13.00, E. St. Louis, freight allowed over 0.50 per pound. High grade, 13.85; special high grade, 14.00, deld. Diecasting alloy ingot No. 3, 16.50; Nos. 2 and 5, 17.00, deld.

Zirconium: Ingots, commercial grade, 14.40 per lb; low-hafnium reactor grade, $23.07. Sponge, $10 per lb. Powder electronics grade, $15 per lb; flash grade, $11.50.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 31.25-32.75; No. 12 foundry alloy (No. 2 grade), 30.00-30.75; 5% silicon alloy, 0.60 Cu max, 31.00-32.25; 13 alloy, 0.60 Cu max, 31.50-32.25; 195 alloy, 31.25-32.25; 108 alloy, 30.00-30.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 30.75; grade 2, 29.75; grade 3, 28.75; grade 4, 28.25.

Brass Ingot: Red brass No. 115, 42.50; tin bronze No. 225, 56.50; No. 245, 48.75; high-leaded tin bronze No. 305, 45.75; No. 1 yellow No. 405, 34.75; manganese bronze No. 421, 38.25.

Magnesium Alloy Ingot: AZ63A, 34.00; AZ91B, 34.00; AZ91C, 34.00; AZ92A, 34.00.

NONFERROUS MILL PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb, f.o.b. Temple, Pa.; nominal 1.9% Be alloy) Strip, $1.84; rod, bar, wire, $1.81.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000-lb lots, 45.35-48.35; 30,000-lb lots, 45.48-48.88; l.c.l., 45.98-48.98. Weatherproof, 100 000-lb lots, 43.78-46 03; 30 000-lb lots, 44.03-46.28; l.c.l., 44.53-46.78. Magnetic wire deld., 15,000 lb or more, 52.36-55.52; l.c.l., 53.11-56.27.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets, full rolls, 140 sq ft or more, $20 per cwt; pipe, full coils, $20 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $14.00-$14.50; sheared mill plate, $11.00; strip, $14.00-$14.50; wire, $10.00-$10.50; forging billets, $8.75; hot-rolled and forged bars, $8.75.

ZINC

(Prices per lb, c.l., f.o.b. mill) Sheets, 23.00; ribbon zinc in coils, 20.00-20.50; plates, 19.00-22.25.

ZIRCONIUM

Plate, $22; H.R. strip, $19; C.R. strip, $29; forged or H.R. bars, $17; wire, 0.015 in., 1.00c per linear foot.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R.	102	78	99
Strip, C.R.	102	87	125
Plate, H.R.	97	82	95
Rod, Shapes H.R.	87	69	93
Rod, Shapes C.R.	91	75	115
Seamless Tubes	122	108	153
Shot, Blocks	...	65	...

ALUMINUM

Screw Machine Stock: 30.000 lb base.

Diam.(in.)or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
Drawn				
0.125	67.9	66.4	...	...
0.156-0.172	57.5	55.9	...	...
0.188	57.5	55.9	...	71.7
0.219-0.234	54.5	52.9	...	...
0.250-0.281	54.5	52.9	...	68.4
0.313	54.5	52.9	...	65.2
Cold-finished				
0.375-0.547	53.4	51.4	63.7	61.3
0.563-0 688	53.4	51.4	60.6	57.5
0.750-1.000	52.1	50.1	55.4	54.2
1.063	52.1	50.1	...	52.3
1.125-1.500	50.1	48.2	53.6	52.3
Rolled				
1.563	48.8	46.9	...	...
1.625-2.000	48.2	46.2	...	50.5
2.125-2.500	47.0	45.0	...	...
2.563-3.375	45.6	43.6	...	...

ALUMINUM

Sheets and Circles: 110 and 3003 mill finish (30.000 lb base; freight allowed)

Thickness Range Inches	Flat Sheet	Flat Sheet Circles*	Coiled Sheet	Coiled Sheet Circle
0.249-0.136	37.5	42.3	...	...
0.135-0.096	38.0	43.2	...	...
0.095-0.077	38.7	44.2	36.1	41.2
0.076-0.061	39.3	45.1	36.3	41.4
0.060-0.048	39.9	45.6	36.7	42.0
0.047-0.038	40.4	46.5	37.2	42.6
0.037-0.030	40.8	47.0	37.6	43.1
0.029-0.024	41.4	47.5	37.9	43.6
0.023-0.019	42.2	49.0	38.8	44.6
0.018-0.017	43.0	...	39.4	45.4
0.016-0.015	43.9	...	40.2	46.4
0.014	44.9	...	41.2	47.5
0.013-0.012	46.1	...	41.9	48.9
0.011	47.1	...	43.1	50.8
0.010-0.0095	48.4	...	44.3	52.2
0.009-0.0085	49.7	...	45.8	54.1
0.008-0.0075	51.3	...	47.0	56.1
0.007	52.8	...	48.5	58.4
0.006	54.4	...	49.9	63.4

*48 in. max diam. †26 in. max diam.

ALUMINUM

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam. 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	36.5	40.8
5050-F	37.6	41.9
3004-F	38.6	43.8
5052-F	39.9	45.2
6061-T6	41.1	46.0
2024-T4*	43.6	49.9
7075-T6*	51.4	58.5

*24-48 in. widths or diam, 72-180 in. lengths.

ALUMINUM

Forging Stock: Round, Class 1, 39.10-50.10, in specific lengths 36-144 in.. diameters 0.375-8 in. Rectangles and squares, Class 1, 43.00-56.20 in random lengths, 0.375-4 in. thick, widths 0.750-10 in.

Pipe: A.S.A. Schedule 40, alloy 6063-T6, 20-ft lengths, plain ends, 90,000-lb base, per 100 ft.

Nom. Pipe Size (in.)		Nom. Pipe Size (in.)	
⅜	$16.85	2	$ 51.95
1	26.50	4	143.00
1¼	35.85	6	256.70
1½	42.90	8	386.30

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032 in., 99c; 0.064 in., 78.00c; 0.125 in., 63.50c, 30.000 lb and over, f.o.b. mill.

Plate: AZ31, 61.00c, 30.000 lb or more, 0.250 in. and over, widths 24-60 in., lengths 72-180 in.; tread plate, 64.00c, 30,000 lb or more, ¼-in. thick, widths 24-60 in., lengths 60-192 in.; tooling plate, 66.00c, 30,000 lbs or more, .250-3.000 in., widths 60-72 in., lengths 72-180 in.

Extrusions: AZ31 commercial grade, rectangles, ¼ x 2 in., 64.70c; 1 x 4 in., 69.50c. Rod, 1 in., 61.50c; 2 in., 59.00c. Tubing, 1 in. OD x 0.065 in., 82.50; Angles, 1 x 1 x ⅛-in., 68.40c; 2 x 2 x ¼-in., 62.50c. Channels, 5 in., 63.40c. I-beams, 5 in., 62.70c.

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 1100 clippings, 18.50-19.50; old sheets, 14.50-17.00; borings and turnings, 10.50-11.50; crankcases, 15.50-17.00; industrial castings, 14.50-17.00.

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	59.76-62.76b	57.36-60.36c	.....	59.82-62.82	38.000	38.000	37.250
Yellow Brass	50.27-52.27	40.55-42.41d	50.81-52.81	53.18-55.18	28.125	27.875	26.000
Red Brass, 85%	55.54-58.09	55.48-58.03	56.08-58.63	58.35-60.90	33.375	33.125	32.625
Low Brass, 80%	54.15-56.55	54.00-56.49	54.69-57.09	56.96-59.36	32.000	31.750	31.250
Naval Brass	53.83	48.14	60.89	56.99	24.875*	24.625*	24.125*
Com. Bronze, 90%	57.48-60.18	57.42-60.12	58.02-60.72	60.04-62.74	34.750	34.500	34.000
Nickel Silver, 10%	64.05	62.53g	.....	.....	31.750	31.500	15.875
Phos. Bronze, A, 5%	78.15-80.99	78.65	78.65	79.83	38.250	38.000	37.000
Silicon Bronze	63.66-66.54	62.85	63.70	64.73e	35.000*	34.750*	34.000*
Manganese Bronze	57.59	51.67	.....	.....	.....	.....	.....
Muntz Metal	51.94	47.75	.....	.....	26.375	26.125	25.625

a. Cents per lb, f.o.b. mill; based on copper price spread from 40 cents to 43 cents per lb; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20 000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. Prices based on copper at 42 cents per lb except those marked with an asterisk (*) which are based on 40-cent copper. g. Leaded.

Copper and Brass: No. 1 heavy copper and wire, 35.50-36.00; No. 2 heavy copper and wire, 34.50-35.00; light copper, 32.50-33.00; red brass, No. 1 composition red brass, 28.50-29.50; No. 1 composition turnings, 27.50-28.50; yellow brass turnings, 18.50-19.00; new brass clippings, 23.50-24.00; light brass, 18.50-19.00; heavy yellow brass, 21.00-21.50; new brass rod ends, 22.00-22.50; auto radiators, unsweated, 22.50-23.00; cocks and faucets, 23.50-24.00; brass pipe, 24.00-24.50.

Lead: Heavy, 11.50-12.00; battery plates, 6.50-6.75; linotype and stereotype, 14.00-14.25; electrotype, 12.00-12.50; mixed babbitt, 14.50.

Magnesium: Clippings, 18.50-19.50; clean castings, 18.00-19.00; iron castings, not over 10% removable Fe, less full deduction for Fe, 16.00-17.00.

Monel: Clippings, 38.50-42.00; old sheets, 34.00-38.00; turnings, 29.50; rods, 38.50-42.00.

Nickel: Sheets and clips, 80.00-90.00; rolled anodes, 80.00-90.00; turnings, 65.00-75.00; rod ends, 80.00-90.00.

Zinc: Old zinc, 5.00-5.50; new die-cast scrap, 5.00-5.50; old die-cast scrap, 3.50-3.75.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 1100 clippings, 22.00-22.50; 3003 clippings, 21.75-22.50; 6151 clippings, 21.50-22.50; 5052 clippings, 21.50-22.50; 2014 clippings, 21.00; 2017 clippings, 21.00; 2024 clippings, 21.00; mixed clippings, 21.00-21.50; old sheet, 18.50-19.00; old cast, 18.50-19.00; clean old cable (free of steel), 21.50-22.50; borings and turnings, 18.50-20.00.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 54.00; light scrap, 49.00;turnings and borings, 39.00.

Copper and Brass: No. 1 copper, 40.50-42.00; No. 2 copper 39.00-40.00; light copper, 37.00-38.00; refinery brass (60% copper) per dry copper content, 35.00-26.25.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper and Brass: No. 1 copper, 40.00-42.00; No. 2 copper, 39.00-40.00; light copper, 37.00-38.00; No. 1 composition borings, 32.00-33.00; No. 1 composition solids, 32.50-33.50; heavy yellow brass solids, 23.50-24.00; yellow brass turnings, 22.00-23.00; radiators, 25.00-26.50.

PLATING MATERIAL

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.70 per lb.

Copper: Flat-rolled, 59.42, oval, 58.92, 5000-10,000 lb; electrodeposited, 49.78, 2000-5000 lb lots; cast, 55.54, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, $1.015; 100-499 lb, 99.50; 500-4999 lb, 95.50; 5000-29,999 lb, 93.50; 30,000 lb, 91.50. Carbonized, deduct 3 cents a lb. All prices eastern delivery effective Jan. 1, 1955.

Tin: Bar or slab, less than 200 lb, $1.145; 200-499 lb, $1.13; 500-999 lb, $1.125; 1000 lb or more, $1.12.

Zinc: Bar, 21.00; bar or flat top, 20.00, ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb, in 100-lb drums.

Chromic Acid: Less than 10,000 lb, 28.50; over 10,000 lb, 27.50.

Copper Cyanide: 100 lb, 76.80; 200 lb, 76.05; 300 lb, 75.80; 400-900 lb, 75.05; 1000 lb and over, 73.05; effective Mar. 24, 1955.

Copper Sulphate: Crystal, 100 lb, 21.50; 200 lb, 18.50; 300 lb, 17.50; 400 lb, 17.00; 500-1900 lb, 15.50; 2000-10,000 lb, 15.25; 10,000 lb and up, 15.15. Powder, add 0.5 to above prices. Effective Mar. 29, 1955.

Nickel Chloride: 100 lb, 46.50; 200 lb, 44.50; 300 lb, 43.50; 400-4900 lb, 41.50; 5000-9900 lb, 39.50; 10,000 lb and over, 38.50. All prices eastern delivery, effective Jan. 1, 1955.

Nickel Sulphate: 100 lb, 38.25; 200 lb, 36.25; 300 lb, 35.25; 400-4900 lb, 33.25; 5000-35,900 lb, 31.25; 36,000 lb, 30.25. All prices eastern delivery effective Jan. 1, 1955.

Silver Cyanide: (Cents per ounce) 4-oz bottle, 83.125; 16-oz bottle, 81.875; 80-oz bottle, 79.375; 100-oz bottle, 79.375; f.o.b. St. Louis, New York and Los Angeles. Effective Apr. 6, 1955.

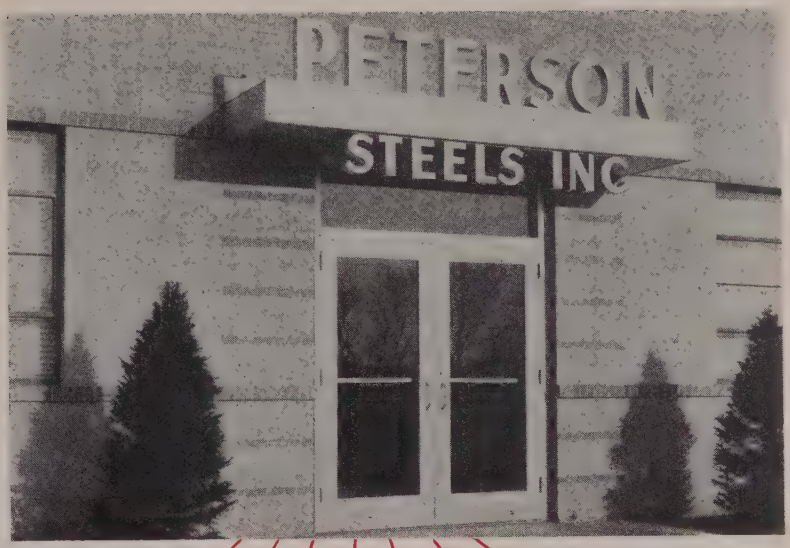
Sodium Cyanide: Egg, under 1000 lb, 19.80; 1000-19,900 lb, 18.80; 20,000 lb and over, 17.80; granular, add 1-cent premium to above.

Sodium Stannate: Less than 100 lb, 72.50; 100-600 lb, 58.10; 700-1900 lb, 55.70; 2000-9900 lb, 53.90; 10,000 lb or more, 52.80.

Stannous Chloride (Anhydrous): Less than 50 lb, $1.588; 50 lb, $1.248; 100-300 lb, $1.098; 400-900 lb, $1.074; 1000-1900 lb, $1.049; 2000-4900 lb, $1.013; 5000-19,900 lb, 95.20; 20,000 lb or more, 89.10.

Stannous Sulphate: Less than 50 lb, $1.287; 50 lb, 98.70; 100-1900 lb, 96.70; 2000 lb or more, 94.70.

Zinc Cyanide: Under 1000 lb, 54.30; 1000 lb and over, 52.30.



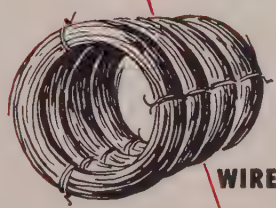
DOORWAY to
YOUR STOCKPILE OF

52100

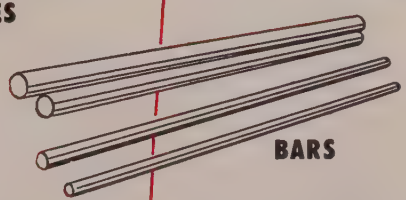
STEEL TUBING and BARS*

FORGINGS

TUBES



WIRE



BARS

Write for the latest stock list.
Contains complete information on sizes, finishes, analyses, etc.

*Leaded and Non-Leaded

55-1

PETERSON STEELS, INC.
UNION, NEW JERSEY
Detroit, Michigan • Chicago, Illinois

Steel Prices

Mill prices as reported to STEEL, cents per pound except as otherwise noted. *Changes shown in italics.* Code numbers following mill points indicate producing company. Key on page 127. Key to footnotes, page 129.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)

Munhall,Pa. U5 .....$65.50

INGOTS, Alloy (NT)

Detroit R7 .....$69.00
Houston S5 .....74.00
Midland,Pa. C18 .....69.00
Munhall,Pa. U5 .....69.00

BILLETS, BLOOMS & SLABS

Carbon, rerolling (NT)

Aliquippa,Pa. J5 ....$68.50
Bessemer,Pa. U5 .....68.50
Bridgeport,Conn. N19 ..73.50
Buffalo R2 .....68.50
Clairton,Pa. U5 .....68.50
Ensley,Ala. T2 .....68.50
Fairfield,Ala. T2 .....68.50
Fontana,Calif. K1 ....76.00
Gary,Ind. U5 .....68.50
Johnstown,Pa. B2 ....68.50
Lackawanna,N.Y. B2 ..68.50
LoneStar,Tex. L6 ....70.00
Munhall,Pa. U5 .....68.50
Pittsburgh J5 .....68.50
S.Chicago,Ill. R2, U5..68.50
S.Duquesne,Pa. U5 ...68.50
Youngstown R2 .....68.50

Carbon, Forging (NT)

Aliquippa,Pa. J5 ....$84.50
Bessemer,Pa. U5 .....84.50
Bridgeport,Conn. N19 ..89.50
Buffalo R2 .....84.50
Canton,O. R2 .....86.50
Clairton,Pa. U5 .....84.50
Conshohocken,Pa. A3 ..89.50
Ensley,Ala. T2 .....84.50
Fairfield,Ala. T2 .....84.50
Fontana,Calif. K1 ....92.00
Gary,Ind. U5 .....84.50
Geneva,Utah C11 .....84.50
Houston S5 .....89.50
Johnstown,Pa. B2 ....84.50
Lackawanna,N.Y. B2 ..84.50
LosAngeles B3 .....94.00
Midland,Pa. C18 .....84.50
Munhall,Pa. U5 .....84.50
Pittsburgh J5 .....84.50
Seattle B3 .....98.00
S.Chicago R2,U5,W14 ..84.50
S.Duquesne,Pa. U5 ...84.50
S.SanFrancisco B3 ....94.00

Alloy, Forging (NT)

Bethlehem,Pa. B2 $96.00
Buffalo R2 .....96.00
Canton,O. R2, T7 ....96.00
Conshohocken,Pa. A3..103.00
Detroit R7 .....96.00
Fontana,Calif. K1 ....115.00
Gary,Ind. U5 .....96.00
Houston S5 .....101.00
Ind.Harbor,Ind. Y1 ...96.00
Johnstown,Pa. B2 ....96.00
Lackawanna,N.Y. B2 ..96.00
LosAngeles B3 .....116.00
Massillon,O. R2 .....96.00
Midland,Pa. C18 .....96.00
Munhall,Pa. U5 .....96.00
S.Chicago R2,U5,W14..96.00
S.Duquesne,Pa. U5 ...96.00
Struthers,O. Y1 .....96.00
Warren,O. C17 .....96.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2 .....$103.50
Canton,O. R2 .....103.50
Cleveland R2 .....103.50
Gary,Ind. U5 .....103.50
S.Chicago R2, W14 ...103.50
S.Duquesne,Pa. U5 ...103.50

SKELP

Aliquippa,Pa. J5 .....4.325
LoneStar,Tex. L6 .....4.30
Munhall,Pa. U5 .....4.225
SparrowsPoint,Md. B2..4.225
Warren,O. R2 .....4.225
Youngstown R2, U5 ...4.225

WIRE RODS

AlabamaCity,Ala. R2 ..5.025
Aliquippa,Pa. J5 .....5.025
Alton,Ill. L1 .....5.20
Buffalo B11, W12 ....5.025
Cleveland A7 .....5.025
Donora,Pa. A7 .....5.025
Fairfield,Ala. T2 .....5.025
Houston S5 .....5.275
IndianaHarbor,Ind. Y1 .5.025
Johnstown,Pa. B2 .....5.025
Joliet,Ill. A7 .....5.025
KansasCity,Mo. S5 ....5.275
Kokomo,Ind. C16 .....5.125
LosAngeles B3 .....5.825
Minnequa,Colo. C10....5.275
Monessen,Pa. P7 .....5.025
N.Tonawanda,N.Y. B11.5.025
Pittsburg,Calif. C11 ...5.675
Portsmouth P12 .....5.025
Roebling,N.J. R5 .....5.125
S.Chicago,Ill. R2 .....5.025
SparrowsPoint,Md. B2..5.125
Sterling,Ill.(1) N15 ....5.025
Sterling,Ill. N15 .....5.125
Struthers,O. Y1 .....5.025
Worcester,Mass. A7 ...5.325

STRUCTURALS

Carbon Steel Std. Shapes

Ala.City,Ala. R2 .....4.60
Aliquippa,Pa. J5 .....4.60
Bessemer,Ala. T2 .....4.60
Bethlehem,Pa. B2 .....4.65
Birmingham C15 .....4.60
Clairton,Pa. U5 .....4.60
Fairfield,Ala. T2 .....4.60
Fontana,Calif. K1 .....5.25
Gary,Ind. U5 .....4.60
Geneva,Utah C11 .....4.60
Houston S5 .....4.70
Ind.Harbor,Ind. I-2 ....4.60
Johnstown,Pa. B2 .....4.65
KansasCity,Mo. S5 ....4.70
Lackawanna,N.Y. B2 ...4.65
LosAngeles B3 .....5.30
Minnequa,Colo. C10 ....4.90
Munhall,Pa. U5 .....4.60
Niles,Calif. P1 .....4.90
Portland,Oreg. O4 .....5.35
Phoenixville,Pa. P4 ....5.15
Seattle B3 .....5.35
S.Chicago U5, W14 .....4.60
S.SanFrancisco B3 .....5.25
Torrance,Calif. C11 ....5.30
Weirton,W.Va. W6 .....4.60

Wide Flange

Bethlehem,Pa. B2 .....4.65
Clairton,Pa. U5 .....4.60
Fontana,Calif. K1 .....5.40
Lackawanna,N.Y. B2 ...4.65
Munhall,Pa. U5 .....4.60
Phoenixville,Pa. P4 ....5.15
S.Chicago,Ill. U5 .....4.60

Alloy Std. Shapes

Clairton,Pa. U5 .....5.65
Fontana,Calif. K1 .....7.30
Gary,Ind. U5 .....5.65
Houston S5 .....5.75
Munhall,Pa. U5 .....5.65
S.Chicago,Ill. U5 .....5.65

H.S., L.A. Std. Shapes

Aliquippa,Pa. J5 .....6.75
Bessemer,Ala. T2 .....6.75
Bethlehem,Pa. B2 .....6.80
Clairton,Pa. U5 .....6.75
Fairfield,Ala. T2 .....6.75
Fontana,Calif. K1 .....7.40
Gary,Ind. U5 .....6.75
Geneva,Utah C11 .....6.75
Houston S5 .....6.85
Ind.Harbor,Ind. I-2, Y1.6.75
Johnstown,Pa. B2 .....6.80
KansasCity,Mo. S5 ....6.85
Lackawanna,N.Y. B2 ...6.80
LosAngeles B3 .....7.45
Munhall,Pa. U5 .....6.75
Seattle B3 .....7.50
S.Chicago,Ill. U5, W14..6.75
S.SanFrancisco B3 .....7.40
Struthers,O. Y1 .....6.75

H.S., L.A. Wide Flange

Bethlehem,Pa. B2 .....6.80
Lackawanna,N.Y. B2 ...6.80
Munhall,Pa. U5 .....6.75
S.Chicago,Ill. U5 .....6.75

PILING

BEARING PILES

Bethlehem,Pa. B2 .....4.65
Lackawanna,N.Y. B2 ...4.65
Munhall,Pa. U5 .....4.60
S.Chicago,Ill. U5 .....4.60

STEEL SHEET PILING

Ind.Harbor,Ind. I-2 ....5.45
Lackawanna,N.Y. B2 ....5.45
Munhall,Pa. U5 .....5.45
S.Chicago,Ill. U5 .....5.45

PLATES

PLATES, Carbon Steel

Ala.City,Ala. R2 .....4.50
Aliquippa,Pa. J5 .....4.50
Ashland,Ky.(15) A10 ...4.50
Bessemer,Ala. T2 .....4.50
Bridgeport,Conn. N19 ..4.75
Buffalo R2 .....4.50
Clairton,Pa. U5 .....4.50
Claymont,Del. C22 .....4.50
Cleveland J5, R2 .....4.60
Coatesville,Pa. L7 .....4.50
Conshohocken,Pa. A3 ...4.50
Detroit M1 .....4.60
Ecorse,Mich. G5 .....4.60
Fairfield,Ala. T2 .....4.50
Fontana,Calif.(30) K1 ..5.15
Gary,Ind. U5 .....4.50
Geneva,Utah C11 .....4.50
GraniteCity,Ill. G4 .....4.70
Harrisburg,Pa. C5 .....5.10
Houston S5 .....4.60
Ind.Harbor,Ind. I-2, Y1.4.50
Johnstown,Pa. B2 .....4.50
Lackawanna,N.Y. B2 ...4.50
LoneStar,Tex. L6 .....4.55
Mansfield,O. E6 .....4.50
Minnequa,Colo. C10 ....5.35
Munhall,Pa. U5 .....4.50
Newport,Ky. N9 .....4.50
Pittsburgh J5 .....4.50
Riverdale,Ill. A1 .....4.50
Seattle B3 .....5.40
Sharon,Pa. S3 .....4.50
S.Chicago R2, U5, W14.4.50
SparrowsPoint,Md. B2 ..4.50
Steubenville,O. W10 ....4.50
Warren,O. R2 .....4.50
Weirton,W.Va. W6 .....4.50
Youngstown R2, U5, Y1.4.50

PLATES, Carbon Abras. Resist.

Fontana,Calif. K1 .....6.30
Geneva,Utah C11 .....5.65
Johnstown,Pa. B2 .....5.65
SparrowsPoint,Md. B2 ..5.65

PLATES, Wrought Iron

Economy,Pa. B14 .....10.40

PLATES,High-Strength Low-Alloy

Aliquippa,Pa. J5 .....6.725
Bessemer,Ala. T2 .....6.725
Clairton,Pa. U5 .....6.725
Cleveland J5, R2 .....6.725
Coatesville,Pa. L7 ....6.725
Conshohocken,Pa. A3 ..6.725
Ecorse,Mich. G5 .....6.825
Fairfield,Ala. T2 .....6.725
Fontana,Calif.(30) K1..7.375
Gary,Ind. U5 .....6.725
Geneva,Utah C11 .....6.725
Houston S5 .....6.825
Ind.Harbor,Ind. I-2, Y1.6.725
Johnstown,Pa. B2 .....6.725
LosAngeles B3 .....7.625
Munhall,Pa. U5 .....6.725
Pittsburgh J5 .....6.725
Seattle B3 .....7.625
Sharon,Pa. S3 .....6.725
S.Chicago,Ill. U5, W14.6.725
SparrowsPoint,Md. B2..6.725
Youngstown U5, Y1 ...6.725

PLATES, Alloy

Bridgeport,Conn. N19 ...6.55
Claymont,Del. C22 .....6.30
Coatesville,Pa. L7 .....6.30
Fontana,Calif. K1 .....6.95
Gary,Ind. U5 .....6.30
Houston S5 .....6.40
Ind.Harbor,Ind. Y1 ....6.30
Johnstown,Pa. B2 .....6.30
Munhall,Pa. U5 .....6.30
Newport,Ky. N9 .....6.30
Seattle B3 .....7.20
Sharon,Pa. S3 .....6.30
S.Chicago,Ill. U5, W14..6.30
SparrowsPoint,Md. B2 ..6.30
Youngstown Y1 .....6.30

FLOOR PLATES

Cleveland J5 .....5.575
Conshohocken,Pa. A3 ..5.575
Harrisburg,Pa. C5 .....5.575
Ind.Harbor,Ind. I-2 ...5.575
Munhall,Pa. U5 .....5.575
S.Chicago,Ill. U5 .....5.575

PLATES, Ingot Iron

Ashland c.l. (15) A10...4.75
Ashland l.c.l. (15) A10..5.25
Cleveland c.l. R2 .....5.10
Warren,O. c.l. R2 .....5.10

BARS

BARS, Hot-Rolled Carbon

Ala.City,Ala. R2 .....4.65
Aliquippa,Pa. J5 .....4.65
Alton,Ill. L1 .....4.85
Atlanta A11 .....4.85
Bessemer,Ala. T2 .....4.65
Birmingham C15 .....4.65
Bridgeport,Conn. N19 ...4.80
Buffalo R2 .....4.65
Canton,O. R2 .....4.75
Clairton,Pa. U5 .....4.65
Cleveland R2 .....4.65
Ecorse,Mich. G5 .....4.75
Emeryville,Calif. J7 ....5.40
Fairfield,Ala. T2 .....4.65
Fairless Hills,Pa. U5 ..4.80
Fontana,Calif. K1 .....5.35
Gary,Ind. U5 .....4.65
Houston S5 .....4.90
Ind.Harbor,Ind. I-2, Y1.4.65
Johnstown,Pa. B2 .....4.65
Joliet,Ill. P22 .....4.65
KansasCity,Mo. S5 .....4.90
Lackawanna,N.Y. B2 ...4.65
LosAngeles B3 .....5.35
Massillon,O. R2 .....4.75
Midland,Pa. C18 .....4.65
Milton,Pa. M18 .....4.65
Minnequa,Colo. C10 ....5.10
Niles,Calif. P1 .....5.00
N.Tonawanda,N.Y. B11..4.65
Pittsburg,Calif. C11 ....5.35
Pittsburgh J5 .....4.65
Portland,Oreg. O4 .....5.40
Seattle B3, N14 .....5.40
S.Chicago R2, U5, W14..4.65
S.Duquesne,Pa. U5 .....4.65
S.SanFran.,Calif. B3 ...5.40
Sterling,Ill.(1) N15 ....4.65
Sterling,Ill. N15 .....4.75
Struthers, O. Y1 .....4.65
Torrance,Calif. C11 ....5.35
Warren,O. R2 .....4.65
Weirton,W.Va. W6 .....4.65
Youngstown R2, U5 ....4.65

BARS, H.R. Leaded Alloy

Warren,O. C17 .....6.325

BARS, Hot-Rolled Alloy

Bethlehem,Pa. B2 .....5.575
Bridgeport,Conn. N19 ..5.725
Buffalo R2 .....5.575
Canton,O. R2, T7 .....5.575
Clairton,Pa. U5 .....5.575
Detroit R7 .....5.575
Ecorse,Mich. G5 .....5.675
Fontana,Calif. K1 .....6.625
FairlessHills,Pa. U5 ..5.725
Gary,Ind. U5 .....5.575
Houston S5 .....5.825
Ind.Harbor,Ind. I-2, Y1.5.575
Johnstown,Pa. B2 .....5.575
KansasCity,Mo. S5 ....5.825
Lackawanna,N.Y. B2 ...5.575
LosAngeles B3 .....6.625
Massillon,O. R2 .....5.575
Midland,Pa. C18 .....5.575
S.Chicago R2, U5, W14.5.575
S.Duquesne,Pa. U5 .....5.575
Struthers,O. Y1 .....5.575
Warren,O. C17 .....5.575
Youngstown U5 .....5.575

BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy

Aliquippa,Pa. J5 .....6.80
Bessemer,Ala. T2 .....6.80
Bethlehem,Pa. B2 .....6.80
Clairton,Pa. U5 .....6.80
Cleveland R2 .....6.80
Ecorse,Mich. G5 .....6.90
Fairfield,Ala. T2 .....6.80
Fontana,Calif. K1 .....7.50
Gary,Ind. U5 .....6.80
Houston S5 .....7.05
Ind.Harb.,Ind. I-2, Y1 ..6.80
Johnstown,Pa. B2 .....6.80
KansasCity,Mo. S5 .....7.05
Lackawanna,N.Y. B2 ...6.80
LosAngeles B3 .....7.50
Pittsburgh J5 .....6.80
Seattle B3 .....7.55
S.Chicago W14 .....6.80
S.Duquesne,Pa. U5 .....6.80
S.SanFrancisco B3 .....7.55
Struthers,O. Y1 .....6.80
Warren,O. R2 .....6.80
Youngstown U5 .....6.80

BAR SIZE ANGLES; H.R. Carbon

Bethlehem,Pa. B2 .....4.80

BAR SIZE ANGLES; S. Shapes

Aliquippa,Pa. J5 .....4.65
Atlanta A11 .....4.85
Fontana,Calif. K1 .....5.35
Niles,Calif. P1 .....5.00
Pittsburgh J5 .....4.30
Portland,Oreg. O4 .....5.05
SanFrancisco S7 .....5.05

BAR SHAPES, Hot-Rolled Alloy

Clairton,Pa. U5 .....5.65
Gary,Ind. U5 .....5.65
Houston S5 .....5.90
KansasCity,Mo. S5 ....5.90
Youngstown U5 .....5.65

BARS, C.F. Leaded Alloy

Ambridge,Pa. W18 ....8.325
Camden,N.J. P13 .....8.50
Chicago W18 .....8.325
Cleveland C20 .....8.325
Monaca,Pa. S17 .....8.325
Newark,N.J. W18 .....8.50
SpringCity,Pa. K3 .....8.50
Warren,O. C17 .....8.325

BARS, Cold-Finished Carbon

Ambridge,Pa. W18 .....5.90
BeaverFalls,Pa. M12,R2.5.90
Buffalo B5 .....5.95
Camden,N.J. P13 .....6.35
Carnegie,Pa. C12 .....5.90
Chicago W18 .....5.90
Cleveland A7, C20 .....5.90
Detroit R7 .....5.90
Detroit B5, P17 .....6.10
Donora,Pa. A7 .....5.90
Elyria,O. W8 .....5.90
FranklinPark,Ill. N5 ...5.90
Gary,Ind. R2 .....5.90
GreenBay,Wis. F7 .....5.90
Hammond,Ind. L2, M13.5.90
Hartford,Conn. R2 .....6.40
Harvey,Ill. B5 .....5.90
LosAngeles R2, S30 ....7.35
Mansfield,Mass. B5 ....6.45
Massillon,O. R2, R8 ....5.90
Midland,Pa. C18 .....5.90
Monaca,Pa. S17 .....5.90
Newark,N.J. W18 .....6.35
NewCastle,Pa.(17) B4 ..5.90
Pittsburgh J5 .....5.90
Plymouth,Mich. P5 .....6.15
Putnam,Conn. W18 ....6.45
Readville,Mass. C14 ....6.45
S.Chicago,Ill. W14 .....5.90
SpringCity,Pa. K3 .....6.35
Struthers,O. Y1 .....5.90
Waukegan,Ill. A7 .....5.90
Worcester,Mass. W19 ...6.35
Youngstown F3, Y1 .....5.90

BARS, Cold-Finished Carbon (Turned and Ground)

Cumberland,Md. C19 ...5.15

BARS, Cold-Finished Alloy

Ambridge,Pa. W18 ....7.425
BeaverFalls,Pa. M12,R2 7.425
Bethlehem,Pa. B2 .....7.425
Buffalo B5 .....7.425
Camden,N.J. P13 .....7.60
Canton,O. T7 .....7.425
Carnegie,Pa. C12 .....7.425
Chicago W18 .....7.425
Cleveland A7, C20 .....7.425
Detroit R7 .....7.425
Detroit B5, P17 .....7.625
Donora,Pa. A7 .....7.425
Elyria,O. W8 .....7.425
Gary,Ind. R2 .....7.425
GreenBay,Wis. F7 .....7.425
Hammond,Ind. L2, M13.7.425
Hartford,Conn. R2 .....7.725
Harvey,Ill. B5 .....7.425
Lackawanna,N.Y. B2 ..7.425
LosAngeles S30 .....9.10
Mansfield,Mass. B5 ....7.725
Massillon,O. R2, R8 ....7.425
Midland,Pa. C18 .....7.425
Monaca,Pa. S17 .....7.425
Newark,N.J. W18 .....7.60
Plymouth,Mich. P5 .....7.625
S.Chicago W14 .....7.425
SpringCity,Pa. K3 .....7.60
Struthers,O. Y1 .....7.425
Warren,O. C17 .....7.425
Waukegan,Ill. A7 .....7.425
Worcester,Mass. A7 ...7.725
Youngstown F3, Y1 .....7.425

BARS, Reinforcing (To Fabricators)

Ala.City,Ala. R2 .....4.65
Atlanta A11 .....4.85
Birmingham C15 .....4.65
Buffalo R2 .....4.65
Cleveland R2 .....4.65
Ecorse,Mich. G5 .....4.75
Emeryville,Calif. J7 ....5.40
Fairfield,Ala. T2 .....4.65
FairlessHills,Pa. U5 ....4.80
Fontana,Calif. K1 .....5.35
Ft. Worth,Tex.(42) T4 ..5.10
Gary,Ind. U5 .....4.65
Houston S5 .....4.90

ind.Harbor,Ind. I-2, Y1 4.65
Johnstown,Pa. B2 ..... 4.65
Joliet,Ill. P22 ..... 4.65
KansasCity,Mo. S5 .... 4.90
Lackawanna,N.Y. B2 .. 4.65
LosAngeles B3 ..... 5.35
Milton,Pa. M18 ..... 4.65
Minnequa,Colo. C10 .... 5.10
Niles,Calif. P1 ..... 5.00
Pittsburg,Calif. C11 .... 5.35
Pittsburgh J5 ..... 4.65
Portland,Oreg. O4 ..... 5.40
SandSprings,Okla. S5 .. 5.15
Seattle B3, N14 ..... 5.40
S.Chicago R2 ..... 4.65
S.Duquesne,Pa. U5 .... 4.65
S.SanFrancisco B3 ..... 5.40
SparrowsPoint,Md. B2 .. 4.65
Sterling,Ill.(1) N15 .... 4.65
Sterling,Ill. N15 ..... 4.75
Struthers,O. Y1 ..... 4.65
Torrance,Calif. C11 .... 5.35
Youngstown R2, U5, Y1 .4.65

BARS, Reinforcing (Fabricated; to Consumers)

Johnstown,Pa. ¼-1" B2 .6.15
KansasCity,Kans. S5 ... 6.45
Lackawanna,N.Y. B2 ... 6.17
Marion,O. P11 ..... 5.90
Pittsburgh U8 ..... 6.17
Seattle B3, N14 ..... 6.60
SparrowsPt. ½-1" B2 .. 6.15
Williamsport,Pa. S19 .. 6.00

RAIL STEEL BARS

Avis,Pa.(3) J8 ..... 4.25
ChicagoHts.(3) C2, I-2. .4.55
ChicagoHts.(4) C2, I-2. .4.65
Ft.Worth,Tex.(26) T4 ... 4.95
Franklin,Pa.(3) F5 .... 4.55
Franklin,Pa.(4) F5 .... 4.65
Marion,O.(3) P11 ..... 4.50
Moline,Ill.(3) R2 ..... 4.65
Tonawanda(3) B12 .... 4.50
Tonawanda(4) B12 .... 4.65
Williamsport,Pa.(3) S19.4.65

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 11.50
Economy,Pa.(D.R.)B14 14.30
Economy(Staybolt) B14 14.65
McK.Rks.(S.R.) L5 ... 11.50
McK.Rks.(D.R.) L5 ... 16.00
McK.Rks.(Staybolt) L5.17.00

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

Ala.City,Ala. R2 ..... 4.325
Allenport,Pa. P7 ..... 4.325
Ashland,Ky.(8) A10 ... 4.325
Cleveland J5, R2 ..... 4.325
Conshohocken,Pa. A3 .. 4.375
Detroit(8) M1 ..... 4.425
Dravosburg,Pa. U5 .... 4.325
Ecorse,Mich. G5 ..... 4.425
Fairfield,Ala. T2 .... 4.325
FairlessHills,Pa. U5 ... 4.375
Fontana,Calif. K1 ..... 5.075
Gary,Ind. U5 ..... 4.325
Geneva,Utah C11 ..... 4.425
GraniteCity,Ill. G4 .... 4.525
Ind.Harbor,Ind. I-2, Y1.4.325
Kokomo,Ind. C16 ..... 4.425
Lackawanna,N.Y. B2 .. 4.325
Mansfield,O. E6, (37) .. 4.325
Munhall,Pa. U5 ..... 4.325
Newport,Ky.(8) N9 ... 4.325
Niles,O. N12 ..... 4.325
Pittsburg,Calif. C11 ... 5.025
Pittsburgh J5 ..... 4.325
Portsmouth,O. P12 .... 4.325
Riverdale,Ill. A1 ..... 4.325
Sharon,Pa. S3 ..... 4.325
S.Chicago,Ill. W14 .... 4.325
SparrowsPoint,Md. B2 .. 4.325
Steubenville,O. W10 ... 4.325
Warren,O. R2 ..... 4.325
Weirton,W.Va. W6 .... 4.325
Youngstown U5, Y1 ... 4.325

SHEETS, H.R. (19 Ga. & Lighter)

Ala.City,Ala. R2 ..... 5.625
Kokomo,Ind. C16 .... 5.475
Niles,O. N12 ..... 5.325

SHEETS, H.R. Alloy

Ind.Harbor,Ind. Y1 .... 7.20
Youngstown Y1 ..... 7.20

SHEETS, H.R. (14 Ga. & Heavier) High-Strength Low-Alloy

Cleveland J5, R2 .... 6.375
Conshohocken,Pa. A3 .. 6.425
Dravosburg,Pa. U5 .... 6.375
Ecorse,Mich. G5 ..... 6.475
Fairfield,Ala. T2 ..... 6.375
FairlessHills,Pa. U5 ... 6.425
Fontana,Calif. K1 .... 7.125
Gary,Ind. U5 ..... 6.375
Ind.Harbor,Ind. I-2, Y1 6.375
Lackawanna(35) B2 ... 6.375
Munhall,Pa. U5 ..... 6.375
Pittsburgh J5 ..... 6.375
Sharon,Pa. S3 ..... 6.375
S.Chicago,Ill. U5 .... 6.375
SparrowsPoint(36) B2.. 6.375
Warren,O. R2 ..... 6.375
Weirton,W.Va. W6 .... 6.375
Youngstown U5, Y1 ... 6.375

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ... 4.575
Cleveland R2 ..... 4.925
Ind.Harbor,Ind. I-2 ... 4.575
Warren,O. R2 ..... 4.925

SHEETS, Cold-Rolled Steel (Commercial Quality)

Allenport,Pa. P7 ..... 5.325
Cleveland J5, R2 ..... 5.325
Conshohocken,Pa. A3 .. 5.375
Dravosburg,Pa. U5 .... 5.325
Detroit M1 ..... 5.325
Ecorse,Mich. G5 ..... 5.425
Fairfield,Ala. T2 ..... 5.325
FairlessHills,Pa. U5 ... 5.375
Follansbee,W.Va. F4 .. 5.325
Fontana,Calif. K1 .... 6.425
Gary,Ind. U5 ..... 5.325
GraniteCity,Ill. G4 .... 5.525
Ind.Harbor,Ind. I-2, Y1 5.325
Lackawanna,N.Y. B2 .. 5.325
Mansfield,O. E6 ..... 5.325
Middletown,O. A10 .... 5.325
Newport,Ky. N9 ..... 5.325
Pittsburg,Calif. C11 ... 6.275
Pittsburgh J5 ..... 5.325
Portsmouth,O. P12 .... 5.325
SparrowsPoint,Md. B2.. 5.325
Steubenville,O. W10 ... 5.325
Warren,O. R2 ..... 5.325
Weirton,W.Va. W6 .... 5.325
Youngstown Y1 ..... 5.325

SHEETS, Cold-Rolled High-Strength Low-Alloy

Cleveland J5, R2 ..... 7.875
Dravosburg,Pa. U5 .... 7.875
Ecorse,Mich. G5 ..... 7.975
FairlessHills,Pa. U5 .. 7.925
Fontana,Calif. K1 .... 8.975
Gary,Ind. U5 ..... 7.875
IndianaHarbor,Ind. Y1.7.875
Lackawanna(37) B2 ... 7.875
Pittsburgh J5 ..... 7.875
SparrowsPoint(38) B2.. 7.875
Warren,O. R2 ..... 7.875
Weirton,W.Va. W6 .... 7.875
Youngstown Y1 ..... 7.875

SHEETS, Cold-Rolled Ingot Iron

Middletown,O. A10 .... 5.825

SHEETS, Culvert (16 Gage)	Cu Alloy	Cu Fe
Ashland,Ky. A10	6.90	...
Canton,O. R2	6.50	7.10
Dravosburg U5	6.10	...
Fairfield T2	6.10	...
Gary,Ind. U5	6.10	6.35
Ind.Harbor I-2	6.10	6.35
Kokomo,Ind. C16	6.20	...
MartinsFry. W10	6.10	...
Newport,Ky. N9	6.10	6.35
Pitts.,Calif. C11	6.85	...
SparrowsPt. B2	6.10	...

SHEETS, Culvert—Pure Iron

Ashland,Ky. A10 ..... 7.15
Gary,Ind. U5 ..... 5.95
MartinsFry,O. W10 .... 6.35

SHEETS, Galvanized Steel Hot-Dipped

Ala.City,Ala. R2 ..... 5.85‡
Ashland,Ky. A10 ..... 5.85†
Canton,O. R2 ..... 5.85‡
Delphos,O. N16 ..... 6.60‡
Dover,O. R1 ..... 5.85‡
Dravosburg,Pa. U5 .... 5.85†
Fairfield,Ala. T2 ..... 5.85†
Gary,Ind. U5 ..... 5.85*
GraniteCity,Ill. G4 .... 6.05
Ind.Harbor,Ind. I-2 ... 5.85†
Kokomo,Ind. C16 .... 5.95‡
MartinsFerry,O. W10 .. 5.85*
Middletown,O. A10 .... 5.85†
Newport,Ky. N9 ..... 5.85‡
Niles,O. N12 ..... 6.85‡
Pittsburg,Calif. C11 ... 6.60*
SparrowsPt.,Md. B2 ... 5.85†
Steubenville,O. W10 ... 5.85‡
Warren,O. R2 ..... 5.85†
Weirton,W.Va. W6 .... 5.85*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 .... 6.575

SHEETS, Galvanized High-Strength Low-Alloy

Dravosburg,Pa. U5 .... 8.60
SparrowsPoint(39) B2 .. 8.60

SHEETS, Galvannealed Steel

Canton,O. R2 ..... 6.25
Dravosburg,Pa. U5 .... 6.25
Kokomo,Ind. C16 ..... 6.60
Newport,Ky. N9 ..... 6.25
Niles,O. N12 ..... 7.25

SHEETS, Galvanized Ingot Iron (Hot-dipped Continuous)

Ashland,Ky. A10 ..... 6.10
Middletown,O. A10 .... 6.10

SHEETS, Electrogalvanized

Cleveland(28) R2 ..... 6.30
Niles,O.(28) R2 ..... 6.30
Weirton,W.Va. W6 .... 6.55

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) .8.50
Butler,Pa. A10 (type 2) .8.60

SHEETS, Enameling Iron

Ashland,Ky. A10 ..... 5.90
Cleveland R2 ..... 5.90
Dravosburg,Pa. U5 .... 5.90
Gary,Ind. U5 ..... 5.90
GraniteCity,Ill. G4 ..... 6.10
Ind.Harbor,Ind. I-2 .... 5.90
Middletown,O. A10 .... 5.90
Niles,O. N12 ..... 5.90
Youngstown Y1 ..... 5.90

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ... 7.75
Yorkville,O. W10 ..... 7.75

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va. W10 6.25
Gary,Ind. U5 ..... 6.25
Mansfield,O. E6 ..... 6.25
Middletown,O. A10 ..... 6.25
Niles,O. N12 ..... 6.25
Weirton,W.Va. W6 .... 6.25

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ..... 6.65

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Co.
A6 American Shim Steel Co.
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div. Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo-Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div. H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C31 Chester Blast Furnace Inc.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H7 Helical Tube Co

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Div., Jones & Laughlin Steel Corp.
M14 McInnes Steel Co.
M16 Md. Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Prod. Div., Merritt-Chapman&Scott

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Northwest.SteelRoll.Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
N19 Northeastern Steel Corp.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Products
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
T13 Tube Methods Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Division, H. K. Porter Co. Inc.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel

Y1 Youngstown Sheet&Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ..4.325
Allenport,Pa. P7 .....4.325
Alton,Ill. L1 .....4.50
Ashland,Ky.(8) A10 ...4.325
Atlanta A11 .....4.525
Bessemer,Ala. T2 .....4.325
Birmingham C15 .....4.325
Bridgeport,Conn. N19 ..4.625
Buffalo(27) R2 .....4.325
Conshohocken,Pa. A3 ..4.375
Detroit M1 .....4.425
Ecorse,Mich. G5 .....4.425
Fairfield,Ala. T2 .....4.325
Fontana Calif. K1 ....5.075
Gary,Ind. U5 .....4.325
Ind.Harbor Ind. I-2, Y1.4.325
Johnstown,Pa.(25) B2..4.325
Lackaw'na,N.Y.(25) B2 4.325
LosAngeles(25) B3 ....5.075
Milton,Pa. M18 .....4.325
Minnequa,Colo. C10 ...5.425
NewBritain(10) S15 ...4.325
N.Tonawanda,N.Y. B11 4.325
Pittsburg,Calif. C11 ...5.075
Portsmouth O. P12 ....4.325
Riverdale,Ill. A1 .....4.325
SanFrancisco S7 .....5.05
Seattle(25) B3 .....5.325
Seattle N14 .....5.40
Sharon,Pa. S3 .....4.325
S.Chicago,Ill. W14 ....4.325
S.SanFrancisco(25) B3.5.075
SparrowsPoint,Md. B2..4.325
Sterling(1) N15 .....4.325
Sterling,Ill. N15 .....4.425
Torrance,Calif. C11 ...5.075
Warren,O. R2 .....4.325
Weirton,W.Va. W6 ....4.325
Youngstown U5 .....4.325

STRIP, Hot-Rolled Alloy

Bridgeport,Conn. N19 ...7.50
Carnegie,Pa. S18 .....7.20
Fontana,Calif. K1 .....8.85
Gary,Ind. U5 .....7.20
Ind.Harbor,Ind. Y1 ....7.20
LosAngeles B3 .....8.40
Newport,Ky. N9 .....7.20
Sharon,Pa. S3 .....7.20
S.Chicago W14 .....7.20
Youngstown U5, Y1 ....7.20

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2 .....6.425
Conshohocken,Pa. A3 ..6.425
Ecorse Mich. G5 .....6.525
Fairfield,Ala. T2 .....6.425
Fontana,Calif. K1 .....7.525
Gary,Ind. U5 .....6.425
Houston S5 .....6.675
Ind.Harbor,Ind. I-2, Y1.6.425
KansasCity,Mo. S5 ....6.675
Lackawanna,N.Y. B2 ..6.425
LosAngeles(25) B3 ....7.175
Seattle(25) B3 .....7.425
Sharon,Pa. S3 .....6.425
S.SanFrancisco(25) B3.7.175
SparrowsPoint,Md. B2..6.425
Warren O. R2 .....6.425
Weirton,W.Va. W6 ....6.425
Youngstown U5, Y1 ...6.425

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ...4.575
Warren,O. R2 .....4.925

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 .....6.25
Baltimore T6 .....6.25
Boston T6 .....6.80
Buffalo S40 .....6.25
Cleveland J5 .....6.45
Cleveland A7 .....6.25
Conshohocken,Pa. A3 ...6.30
Dearborn,Mich. D3 ....6.35
Detroit D2, M1, P20....6.35
Dover,O. G6 .....6.25
Ecorse,Mich. G5 .....6.35
Follansbee,W.Va. F4 ...6.25
Fontana,Calif. K1 .....8.00
FranklinPark,Ill. T6 ...6.35
Ind.Harbor Ind. I-2 ....6.35
Ind.Harbor,Ind. Y1 ....6.45
Indianapolis C8 .....6.40
Lackawanna,N.Y. B2 ...6.25
LosAngeles C1 .....8.50
NewBedford Mass. R10..6.70
NewBritain(10) S15 ....6.25
NewCastle,Pa. B4, E5...6.25
NewHaven,Conn. A7 ....7.00
NewHaven,Conn. D2 ....6.70
NewKensington,Pa. A6 ..6.25
Pawtucket,R.I. R3 .....6.90
Pawtucket,R.I. N8 .....6.80
Pittsburgh J5 .....6.45
Portsmouth,O. P12 ....6.25
Riverdale,Ill. A1 .....6.35
Rome,N.Y.(32) R6 .....6.25
Sharon,Pa. S3 .....6.25
SparrowsPt.,Md. B2 ....6.25
Trenton,N.J.(31) R5 ....7.80
Wallingford,Conn. W2 ..6.70
Warren O. R2 T5 .....6.25
Weirton, W.Va. W6 ....6.25
Worcester,Mass. A7 ....7.10
Youngstown Y1 .....6.45
Youngstown C8 .....6.25

STRIP, Cold-Rolled Alloy

Boston T6 .....13.80
Carnegie Pa. S18 .....13.45
Cleveland A7 .....13.45
Dover,O. G6 .....13.45
FranklinPark,Ill. T6 ...13.45
Harrison,N.J. C18 .....13.45
Indianapolis C8 .....13.60
Pawtucket,R.I. N8 ....13.80
Sharon,Pa. S3 .....13.45
Worcester,Mass. A7 ....13.75
Youngstown C8 .....13.45

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland A7 .....9.10
Dearborn,Mich. D3 ....9.20
Dover,O. G6 .....9.30
Ecorse,Mich. G5 .....9.20

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	7.30	9.25	10.80	12.95	15.65
Boston T6	7.55	9.25	10.80	12.95	15.65
Bristol,Conn. W1	...	...	10.80	12.95	....
Carnegie,Pa. S18	...	8.95	10.50	12.65	....
Cleveland A7	7.00	8.95	10.50	12.65	15.35
Cleveland C7	...	8.95	10.50	12.65	15.35
Dearborn,Mich. D3	7.10	9.05	10.60	....	....
Detroit D2	7.10	9.05	10.60	12.75	....
Dover,O. G6	7.00	8.95	10.50	12.65	15.35
Follansbee,W.Va. F4	7.40	8.95	10.50**	....	....
FranklinPark,Ill. T6	7.10	8.95	10.50	12.65	15.35
Harrison,N.J. C18	...	...	10.80	12.95	15.65
Indianapolis C8	7.15	9.10	10.50	12.65	15.35
NewBritain,Conn.(10) S15.	7.00	8.95	10.50	12.65	15.35
NewCastle,Pa. B4, E5	7.00	8.95	10.50	12.65	....
NewHaven,Conn. D2	7.45	9.25	10.80	12.95	....
NewKensington,Pa. A6	7.00	8.95	10.50	....	....
New York W3	...	9.25	10.80	12.95	15.65
Pawtucket,R.I. N8	7.55	9.25	10.80	12.95	15.35
Riverdale,Ill. A1	7.10	8.95	10.50	12.65	15.35
Rome,N.Y.(32) R6	7.00	8.95	10.50	12.65	15.35
Sharon,Pa. S3	7.00	8.95	10.50	12.65	15.35
Trenton,N.J. R5	...	9.25	10.80	12.95	15.65
Wallingford,Conn. W2	7.45	9.25	10.80	12.95	15.65
Warren,O. T5	7.00	8.95	10.50	12.65	15.35
Weirton,W.Va. W6	7.00	8.95	10.50	12.65	15.35
Worcester,Mass. T6	7.55	9.25	10.80	12.95	15.65
Worcester,Mass. A7	7.85	9.25	10.80	12.95	15.65
Youngstown C8	7.00	8.95	10.50	12.65	15.35

**0.065 C, max.

Spring Steel (Tempered)					
Bristol,Conn. W1	...	...	14.40	17.60	....
Buffalo W12	...	...	14.40	....	....
FranklinPark,Ill. T6	...	...	14.90	18.10	21.50
Harrison,N.J. C18	...	...	14.40	17.60	21.00
NewYork W3	...	...	14.40	17.60	21.00
Trenton,N.J. R5	...	...	14.40	17.60	21.00
Worcester,Mass. A7, T6...	...	...	14.40	17.60	21.00
Worcester,Mass. W12	...	...	14.40	....	....
Youngstown C8	...	...	14.75	17.95	21.35

SILICON STEEL

H.R. SHEETS (22 Ga., cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	...	...	9.95	10.95	11.85
Brackenridge,Pa. A4	...	...	9.95	10.95	11.85
Mansfield,O. E6	8.40	9.35	9.95	10.95	11.85
Newport,Ky. N9	8.40	9.35	9.95	10.95	11.85
Niles,O. N12	8.40	9.35	9.95	10.95	....
Vandergrift,Pa. U5	...	9.35	9.95	10.95	11.85
Warren,O. R2	8.40	9.35	9.95	10.95	11.85
Zanesville,O. A10	...	9.35	9.95	10.95	11.85

C.R. COILS & CUT LENGTHS, (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
Brackenridge Pa. A4	...	...	10.70	11.70	12.60
GraniteCity,Ill. G4	8.80*	9.80*	10.40*	11.40*	....
IndianaHarbor,Ind. I-2	8.60†	9.60*	10.20*	11.20*	....
Vandergrift,Pa. U5	...	10.10†	10.70†	11.70†	12.60†
Vandergrift,Pa. U5	8.60*	9.60*	10.20*	11.20*	12.10*
Warren,O. R2	8.60†	10.10	10.70	11.70	12.60
Zanesville,O. A10	...	10.10	10.70	11.70	12.60

H.R. SHEETS (22 Ga., cut lengths)	Transformer Grade T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	12.80	13.35	13.85	14.85
Brackenridge,Pa. A4	12.80	....	....	....
Newport,Ky. N9	12.80	....	....	....
Vandergrift,Pa. U5	12.80	13.35	13.85	14.85
Zanesville,O. A10	12.80§	13.35§	13.85§	14.85§

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-72
Brackenridge,Pa. A4	....	15.85	17.45	17.95	13.55§
Butler,Pa. A10	....	....	17.45	17.95	....
Vandergrift,Pa. U5	14.85	15.85	17.45	17.95	13.55
Warren,O. R2	....	....	....	....	13.55‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. §Coils, ¾-cent higher.

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.50	$7.75	$8.15
Dravosburg,Pa. U5	7.50	7.75	8.15
Fairfield,Ala. T2	7.60	7.85	8.25
FairlessHills,Pa. U5	7.60	7.85	8.25
Gary,Ind. U5	7.50	7.75	8.15
GraniteCity Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.50	7.75	8.15
Niles,O. R2	7.50	7.75	8.15
Pittsburg,Calif. C11	8.25	8.50	8.90
SparrowsPoint,Md. B2	7.60	7.85	8.25
Weirton,W.Va. W6	7.50	7.75	8.15
Yorkville,O. W10	7.50	7.75	8.15
ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	6.175	....	....
Niles,O. R2	6.675	6.875	7.075

TINPLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5..	$8.80	$9.05
Dravosburg,Pa. U5	8.80	9.05
Fairfield,Ala. T2.	8.90	9.15
Fairless,Pa. U5 ..	8.90	9.15
Gary,Ind. U5	8.80	9.05
Ind.Har. I-2, Y1.	8.80	9.05
P.tts.Calif. C11 ..	9.55	9.80
Sp.Pt.,Md. B2 ...	8.90	9.15
Weirton W.Va. W6	8.80	9.05
Yorkville,O. W10.	8.80	9.05

BLACK PLATE (Base Box)

Aliquippa,Pa. J5 .....$6.60
Dravosburg,Pa. U5 ....6.60
Fairfield,Ala. T2 .....6.70
FairlessHills,Pa. U5 ....6.70
Gary,Ind. U5 .....6.60
GraniteCity,Ill. G4 .....6.70
Ind.Harbor,Ind. I-2, Y1.6.60
Niles,O. R2 .....6.60
Pittsburg,Calif. C11 ....7.35
SparrowsPoint,Md. B2 ..6.70
Warren,O. R2 .....6.60
Weirton,W.Va. W6 .....6.60
Yorkville,O. W10 .....6.60

HOLLOWARE ENAMELING Black Plate (29 Gage)

Dravosburg,Pa. U5 ....6.65
Gary,Ind. U5 .....6.65
GraniteCity Ill. G4 .....6.75
Ind.Harbor,Ind. Y1 .....6.65
Yorkville,O. W10 .....6.65

MANUFACTURING TERNES (Special Coated; Base Box)

Dravosburg,Pa. U5 ....$7.85
Gary,Ind. U5 .....7.85

MANUFACTURING TERNES (Light Coated, 6 lb; Base Box)

Yorkville,O. W10 .....$8.75

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5 .....9.85

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ...6.25
Aliquippa,Pa. J5 .....6.25
Alton,Ill. L1 .....6.425
Atlanta A11 .....6.45
Bartonville,Ill. K4 .....6.35
Buffalo W12 .....6.25
Chicago W13 .....6.25
Cleveland A7 .....6.25
Crawfordsville,Ind. M8..6.35
Donora,Pa. A7 .....6.25
Duluth,Minn. A7 .....6.25
Fairfield,Ala. T2 .....6.25
Fostoria,O.(24) S1 .....6.45
Houston S5 .....6.50
Jacksonville,Fla. M8 ...6.77
Johnstown,Pa. B2 .....6.25
Joliet,Ill. A7 .....6.25
KansasCity,Mo. S5 .....6.50
Kokomo Ind. C16 .....6.35
LosAngeles B3 .....7.20
Minnequa,Colo. C10 ....6.50
Monessen,Pa. P7 .....6.25
Newark 6-8 ga. I-1 ....6.90
N.Tonawanda B11 .....6.25
Palmer,Mass. W12 .....6.55
Pittsburg,Calif. C11 ....7.20
Portsmouth,O. P12 .....6.25
Rankin,Pa. A7 .....6.25
S.Chicago,Ill. R2 .....6.25
S.SanFrancisco C10 ....7.20
SparrowsPoint,Md. B2 ..6.35
Sterling Ill.(1) N15 ....6.25
Sterling,Ill. N15 .....6.35
Struthers,O. Y1 .....6.25
Waukegan,Ill. A7 .....6.25
Worcester,Mass. A7 .....6.55

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 .....7.90
Alton,Ill. L1 .....8.075
Bartonville Ill. K4 .....8.00
Buffalo W12 .....7.90
Cleveland A7 .....7.90
Donora,Pa. A7 .....7.90
Duluth Minn. A7 .....7.90
Fostoria,O. S1 .....7.95
Johnstown,Pa. B2 .....7.90
LosAngeles B3 .....8.85
Milbury,Mass.(12) N6 ..8.20
Minnequa,Colo. C10 ....8.15
Monessen,Pa. P16 .....7.90
Muncie,Ind. I-7 .....8.10
Palmer,Mass. W12 .....8.20
Pittsburg,Calif. C11 ....8.85
Portsmouth O. P12 .....7.90
Roebling,N.J. R5 .....8.20
S.Chicago,Ill. R2 .....7.90
S.SanFrancisco C10 ....8.85
SparrowsPt.,Md. B2 ....8.00
Struthers,O. Y1 .....7.90
Trenton,N.J. A7 .....8.20
Waukegan Ill. A7 .....7.90
Worcester A7,J4,T6,W12. 8.20

WIRE, Upholstery Spring

Aliquippa,Pa. J5 .....7.60
Alton,Ill. L1 .....7.775
Buffalo W12 .....7.60
Cleveland A7 .....7.60
Donora,Pa. A7 .....7.60
Duluth,Minn. A7 .....7.60
Johnstown,Pa. B2 .....7.60
KansasCity,Mo. S5 .....7.50
LosAngeles B3 .....8.55
Minnequa,Colo. C10 ...7.775
Monessen,Pa. P16 .....7.60
NewHaven Conn. A7 ....7.90
Palmer,Mass. W12 .....7.90
Pittsburg,Calif. C11 ....8.55
Portsmouth,O. P12 .....7.60
Roebling,N.J. R5 .....7.90
S.Chicago,Ill. R2 .....7.60
S.SanFrancisco C10 ....8.55
SparrowsPoint,Md. B2 ..7.70
Struthers O. Y1 .....7.60
Trenton,N.J. A7 .....7.90
Waukegan Ill. A7 .....7.60
Worcester,Mass. A7 ....7.90

WIRE, Fine & Weaving (8" Coils)

Alton,Ill. L1 .....12.725
Bartonville,Ill. K4 ....12.65
Buffalo W12 .....12.55
Chicago W13 .....12.55
Cleveland A7 .....12.55
Crawfordsville,Ind. M8..12.65
Fostoria,O. S1 .....12.55
Jacksonville,Fla. M8 ...13.08
Johnstown,Pa. B2 .....12.55
Kokomo Ind. C16 .....12.55
Minnequa,Colo. C10 ....12.30
Monessen,Pa. P16 .....12.55
Muncie,Ind. I-7 .....12.75
Palmer,Mass. W12 .....12.85
Roebling,N.J. R5 .....12.85
S.SanFrancisco C10 ....12.90
Waukegan,Ill. A7 .....12.55
Worcester Mass. T6 ....12.85
Worcester,Mass. A7....12.85

WIRE, Galv'd ACSR for Cores

Bartonville Ill. K4 .....10.70
Buffalo W12 .....10.70
Johnstown,Pa. B2 .....10.70
Minnequa,Colo. C10 ...10.825
Monessen,Pa. P16 .....10.70
Muncie,Ind. I-7 .....10.90
Portsmouth,O. P12 .....10.70
Roebling,N.J. R5 .....11.00
SparrowsPt.,Md. B2 ....10.80

ROPE WIRE (A)

Bartonville,Ill. K4 .....10.55
Buffalo W12 .....9.75
Fostoria,O.(23) S1 .....10.55
Johnstown,Pa. B2 .....10.55
Monessen,Pa. P16 .....10.55
Muncie,Ind. I-7 .....10.75
Palmer,Mass. W12 .....10.05
Portsmouth,O. P12 .....9.75
Roebling,N.J. R5 .....10.85
SparrowsPt. B2 .....10.65
Struthers O. Y1 .....10.55
Worcester,Mass. J4 ...10.85

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE
(Continued)

IRE, Tire Bead

artonville,Ill. K4	14.15
onessen,Pa. P16	14.20
oebling,N.J. R5	14.35

IRE, Cold-Rolled Flat

nderson,Ind. G6	9.00
altimore T6	9.30
uffalo W12	9.00
leveland A7	9.00
rawfordsville,Ind. M8	9.00
over,O. G6	9.00
ostoria,O. S1	9.00
ranklinPark,Ill. T6	9.10
okomo,Ind. C16	9.00
assillon,O. R8	9.00
ilwaukee C23	9.20
onessen,Pa. P16	9.00
awtucket,R.I. N8	9.30
iverdale,Ill. A1	9.10
ome,N.Y. R6	9.00
renton,N.J. R5	9.30
orcester A7, T6, W12	9.30

AIL, Stock

To Dealers & Mfrs. (7)	Col.
labamaCity,Ala. R2	152
liquippa,Pa. J5	152
tlanta A11	154
artonville,Ill. K4	154
hicago,Ill. W13	152
leveland A9	157
rawfordsville,Ind. M8	154
onora,Pa. A7	152
uluth,Minn. A7	152
airfield,Ala. T2	152
alveston Tex. D7	157
ouston,Tex. S5	157
ohnstown,Pa. B2	152
oliet,Ill. A7	152
ansasCity,Mo. S5	157
okomo,Ind. C16	154
innequa,Colo. C10	157
onessen Pa. P7	152
ittsburg Calif. C11	171
ankin,Pa. A7	152
.Chicago,Ill. R2	152
parrowsPt.,Md. B2	154
terling,Ill.(1) N15	152
orcester,Mass. A7	158

NAILS, CUT (100 lb keg)

To Dealers (33)	
onshohocken,Pa. A3	$9.05
heeling,W.Va. W10	9.05

STAPLES, Polished Stock

To Dealers & Mfrs. (7)	Col.
liquippa,Pa. J5	152
tlanta A11	154
artonville,Ill. K4	154
rawfordsville,Ind. M8	154
onora,Pa. A7	152
uluth,Minn. A7	152
airfield,Ala. T2	152
ohnstown,Pa. B2	152
oliet,Ill. A7	152
okomo,Ind. C16	154
innequa,Colo. C10	157
onessen Pa. P7	152
ittsburg,Calif. C11	171
ankin,Pa. A2	152
parrowsPt.,Md. B2	154
terling,Ill.(1) N15	152
orcester,Mass. A7	158

TIE WIRE, Automatic Baler (14½ Ga.) (Per 97 lb Net Box)

Coil No. 3150	
AlabamaCity,Ala. R2	$9.35
artonville,Ill. K4	9.45
uffalo W12	9.35
rawfordsville,Ind. M8	9.46
onora,Pa. A7	9.35
uluth,Minn. A7	9.35
ohnstown,Pa. B2	9.35
oliet,Ill. A7	9.35
okomo,Ind. C16	9.45
osAngeles B3	10.14
innequa,Colo. C10	9.60
.Chicago,Ill. R2	9.35
parrowsPt.,Md. B2	9.45
terling,Ill. N15	9.35

Coil No. 6500 Stand.	
AlabamaCity,Ala. R2	$9.65
artonville,Ill. K4	9.75
uffalo W12	9.60
rawfordsville,Ind. M8	9.75
onora,Pa. A7	9.65
uluth,Minn. A7	9.65
ohnstown,Pa. B3	9.65
oliet,Ill. A7	9.65
okomo,Ind. C16	9.75
osAngeles B3	10.45
innequa,Colo. C10	9.90
.Chicago,Ill. R2	9.65
parrowsPt.,Md. B2	9.75
terling,Ill. N15	9.65

Coil No. 6500 Interim	
AlabamaCity,Ala. R2	$9.70
artonville,Ill. K4	9.80
uffalo W12	9.70
rawfordsville,Ind. M8	9.80
onora,Pa. A7	9.70
uluth,Minn. A7	9.70
ohnstown,Pa. B2	9.70
oliet Ill. A7	9.70
okomo,Ind. C16	9.80
osAngeles B3	11.05
innequa,Colo. C10	9.95
.Chicago,Ill. R2	9.70
parrowsPt.,Md. B2	9.80
terling,Ill. N15	9.70

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	175**
Aliquippa J5	172§
Atlanta A11	181
Bartonville,Ill. K4	181
Crawfordsville,Ind. M8	181
Donora,Pa. A7	175†
Duluth Minn. A7	175†
Fairfield,Ala. T2	175†
Houston,Tex. S5	180†
Johnstown,Pa. B2	179*
Joliet,Ill. A7	175†
KansasCity,Mo. S5	180†
Kokomo,Ind. C16	177†
Minnequa,Colo. C10	180**
Monessen Pa. P7	179*
Pittsburg,Calif. C11	195†
Rankin,Pa. A7	175†
S.Chicago,Ill. R2	175**
S.SanFrancisco C10	195**
SparrowsPoint,Md. B2	181*
Sterling,Ill.(1) N15	179*

WOVEN Fence, 9-15 Ga.

	Col.
Ala.City,Ala. R2	162**
Ala.City, 17 ga. R2	241**
Ala.City, 18 ga. R2	251**
Aliq'ppa,Pa.9-14½ga. J5	165§
Atlanta A11	168
Bartonville.Ill. K4	168
Crawfordsville,Ind. M8	168
Donora,Pa. A7	162†
Duluth,Minn. A7	162†
Fairfield,Ala. T2	162†
Houston,Tex. S5	167†
Johnstown,Pa.(43) B2	166
Joliet Ill. A7	162†
KansasCity.Mo. S5	167†
Kokomo,Ind. C16	164†
Minnequa,Colo. C10	167**
Monessen,Pa. 9 ga. P17	166*
Pittsburg,Calif. C11	185†
Rankin,Pa. A7	162†
S.Chicago,Ill. R2	162**
Sterling,Ill.(1) N15	166*

WIRE (16 Gage)

	An'ld Stone	Galv. Stone
Ala.City R2	14.50	16.05**
Bartonville K4	14.60	16.50
Buffalo W12	14.50	....
Cleveland A7	14.50	....
Crawf'dsville M8	14.60	16.50
Fostoria,O. S1	14.60	16.15†
Johnstown B2	14.15	16.40*
Kokomo C16	14.60	16.15†
Minnequa C10	14.75	16.45**
Palmer,MassW12	14.50	16.05*
Pitts.,Calif. C11	14.85	16.40†
S.Chicago R2	14.50	16.05**
SparrowsPt.	B2.14.60	16.50*
Sterling(1)	N15.14.50	16.40
Waukegan A7	14.50	16.05†
Worcester A7	14.80	....

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
Ala.City,Ala. R2	7.40	7.80**
Aliquippa J5	7.40	7.925§
Atlanta A11	7.50	8.075
Bartonville(48) K4	7.50	8.075
Buffalo W12	7.40	8.80†
Cleveland A7	7.40	....
Crawfordsville M8	7.50	8.075
Donora,Pa. A7	7.40	7.80†
Duluth,Minn. A7	7.40	7.80†
Fairfield T2	7.40	7.80†
Houston,Tex. S5	7.65	8.05†
Jacks'ville,Fla.M8	7.90	8.475
Johnstown B2(48)	7.40	7.975*
Joliet Ill. A7	7.40	7.80†
KansasCity.Mo. S5	7.65	8.05†
Kokomo C16	7.50	7.90†
LosAngeles B3	8.35	8.925*
Minnequa C10	7.65	8.05**
Monessen P7 (48)	7.40	7.975*
Palmer,Mass. W12	7.70	8.10†
Pitts.,Calif. C11	8.35	8.75†
Portsmouth,O. P12	7.40	....
Rankin A7	7.40	7.80†
S.Chicago R2	7.40	7.80**
S.SanFran. C10	8.35	8.75**
Spar'wsPt.B2(48)	7.50	8.075*
Str'lng(1)(48)	N15 7.40	7.975*
Struthers,O.(48)	Y1 7.40	7.90‡
Worcester,Mass.	A7 7.70	....

*Based on 12.50c zinc; †5c zinc; §10c zinc; ‡Less than 10c zinc; **Subject to zinc equalization extras.

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	173
Atlanta A11	175
Bartonville,Ill. K4	175
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth,Minn. A7	173
Fairfield,Ala. T2	173
Joliet,Ill. A7	173
Houston S5	178
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
S.SanFran.,Calif. C10	197
SparrowsPoint,Md. B2	175
Sterling,Ill.(1) N15	173

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(Base discounts, less case lots, per cent off list, f.o.b. midwestern plants)

4" and shorter:
- ½" & smaller diam.. +5

Over 4" through 6":
- ½" and smaller diam. +12

6" and shorter:
- ⅜" and ⅝" .... +13
- ¾" and larger .... +16

Longer than 6":
- All diameters .... +25

Lag bolts, all diams:
- 6" and shorter .... +2
- Over 6" long .... +11

Ribbed Necked Carriage. +13
Blank 2
Plow 18
Step, Elevator, Tap and Sleigh Shoe 2
Tire Bolts 12
Boiler & Fitting-Up Bolts 14

NUTS

H.P. and C.P., regular & heavy:
- Square, all sizes 51

H.P., Hex. regular & heavy
- ¾" and smaller 55
- ⅞" to 1⅛", inclusive. 55
- 1¼" to 1½", inclusive 57
- 1⅝" and larger 51

C.P. Hex regular & heavy:
- ¾" and smaller 55
- Larger than ¾" 51

Hot Galv. Nuts (all types):
- ⅜" or smaller 38
- ⅞" to 1½", inclusive. 36

Finished Hex Nuts:
- ¾" and smaller 55
- ⅞" and larger 51

Semifinished & Slotted Hex:
Regular and heavy,
- ¾" and smaller 55
- ⅞" and larger 51

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages; plain finish)

3" and shorter:
- ⅛" thru ¼" diam, 25,000 to 200,000 pieces 61
- Over 200,000 pieces. 64
- 5/16" thru ½" diam: 15,000 to 100,000 pieces 61
- 100,000 or more 64

Longer than 3", any diam: 5000 to 100,000 pieces 61
- Over 100,000 pieces. 64

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh, f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in., larger 9.95
7/16-in. under..List less 32%

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	21.06	20.41
1¼	13	....	24.94	20.44
1½	13	23.31	27.57	22.60
1¾	13	27.54	32.57	26.71
2	13	30.87	36.51	29.93
2¼	13	34.77	41.12	33.72
2¼	12	37.73	44.63	36.59
2½	12	41.57	49.16	40.31
2¾	12	45.00	53.22	43.65
3	12	47.99	56.76	46.54

RAILWAY MATERIALS

	Standard No. 1	Standard No. 2	Tee Rails All No. 2	Tee Rails 60 lb Under
RAILS				
Bessemer,Pa. U5	4.725	4.625	4.675	5.65
Ensley,Ala. T2	4.725	4.625	...	5.65
Fairfield,Ala. T2	...	...	...	5.65
Gary,Ind. U5	4.725	...	...	...
Huntington,W.Va. W7	...	...	...	5.65
IndianaHarbor,Ind. I-2	4.725	4.625	4.675	...
Johnstown,Pa. B2	...	...	...(16)	5.65
Lackawanna,N.Y. B2	4.725	4.625	...	5.65
Minnequa,Colo. C10	4.725	4.625	...	6.15
Steelton,Pa. B2	4.725	4.625	...	...
Williamsport,Pa. S19	...	...	...	5.65

TIE PLATES

Fairfield,Ala. T2	5.625
Gary,Ind. U5	5.625
Ind.Harbor,Ind. I-2	5.625
Lackawanna,N.Y. B2	5.625
Minnequa,Colo. C10	5.625
Seattle B3	5.775
Steelton,Pa. B2	5.625
Torrance,Calif. C11	5.775

TRACK BOLTS (20) Treated

Cleveland R2	12.40
KansasCity,Mo. S5	12.40
Lebanon,Pa. B2	12.40
Minnequa,Colo. C10	12.40
Pittsburgh O3, P1a	12.40
Seattle B3	12.90

AXLES

Ind.Harbor,Ind. S13	7.25
Johnstown,Pa. B2	7.25

JOINT BARS

Bessemer,Pa. U5	5.825
Fairfield,Ala. T2	5.825
Ind.Harbor,Ind. I-2	5.825
Joliet,Ill. U5	5.825
Lackawanna,N.Y. B2	5.825
Minnequa,Colo. C10	5.825
Steelton,Pa. B2	5.825

SCREW SPIKES

Cleveland R2	11.90
Pittsburgh O3	11.90

STANDARD TRACK SPIKES

Fairfield,Ala. T2	7.90
Ind.Harbor,Ind. I-2, Y1	7.90
KansasCity,Mo. S5	7.90
Lebanon Pa. B2	7.90
Minnequa,Colo. C10	7.90
Pittsburgh J5	7.90
Seattle B3	8.40
S.Chicago,Ill. R2	7.90
Struthers,O. Y1	7.90
Youngstown R2	7.90

METAL POWDERS

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

Sponge iron:	Cents
98+% Fe, annealed.	15.25
Unannealed:	
Minus 100 mesh	11.75
Minus 35 mesh	9.25
Minus 20 mesh	9.00
Swedish, c.i.f. N. Y., c.l., in bags	11.25
Domestic (Swedish), f.o.b. Riverton, N.J., in bags	9.50
Canadian, f.o.b. shipping point	9.50
Electrolytic iron:	
Melting stock, 99.91% Fe, irregular fragments of ⅛ in. x 1.3 in.	21.00
Annealed, 99.5% Fe,	36.50
Unannealed (99+% Fe)	32.50
Unannealed (99+% Fe) (minus 325 mesh)	52.00
Powder Flakes (minus 16, plus 100 mesh)..	31.00
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns.	83.00-148.00
Aluminum:	
Atomized, 500 lb drums, frght. allowed	
Carlots	32.20
Ton lots	34.20
Antimony, 500 lb lots	32.00*
Brass, 5000-lb lots	39.00-49.00†
Bronze, 5000-lb lots	58.00-61.50†
Copper:	
Electrolytic	13.75*
Reduced	13.75*
Lead	7.50*
Manganese:	
Minus 35 mesh	61.00
Minus 100 mesh	67.00
Minus 200 mesh	72.00
Nickel, unannealed	94.00
Nickel-Silver, 5000-lb lots	53.25-60.00†
Phosphor-Bronze, ¼-ton lots	58.50
Silicon	43.50
Solder	7.00*
Stainless Steel, 302	94.00
Stainless Steel, 316	$1.25
Tin	14.50*
Zinc, 5000-lb lots	18.25-32.00‡
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	4.50
Less than 1000 lb	4.65
Chromium, electrolytic 99.2% Cr min.	3.50

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §70% Cu, 20% Zn, 10% Ni; **64% Cu, 18% Zn, 18% Ni.

Footnotes

(1) Chicago Base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 Ga. and heavier.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) 3/8" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25 off for untreated.
(21) New Haven, Conn., base.
(22) Deld San Francisco Bay area.
(23) Mild plow, 10.55c.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 5.15c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c for carbon, add 0.40c for alloy and 0.45c H.S.-L.A.
(31) Widths over 5/8-in.; 6.90c for widths 5/8-in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 13 Ga. & heavier; 60" & narrower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. to mill zone or within switching limits, 5.30c.
(43) 9-14½ Ga.
(48) 6-7 Ga.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.25
Ambridge, Pa. N2	6.5	..	10.5	...	13	...	14.5	...	14.5	...	14	...	16.5	...
Lorain, O. N3	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.25
Youngstown Y1	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.25

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	6.5	+10	10.5	+7.25	13	+4.75	14.5	+3.25	14.5	+3.25	14	+3.75	16.5	+1.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Alton, Ill. L1	...	...	....	....	....	....	15.5	+1.75	18.5	2.25	21	5.75	23.5	7
Benwood, W. Va. W10	16.5	+12	7.25	+18.25	+1.75	+26.25	17.5	0.25	20.5	4.75	23	7.75	25.5	7
Butler, Pa. F6	17.5	+11	9	+16.5	0.5	+24	...	...	...	...	...	...	...	...
Etna, Pa. N2	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Fairless Hills, Pa. N3	...	...	....	....	....	....	15.5	+1.75	18.5	2.75	21	5.75	23.5	7
Fontana, Calif. K1	...	...	....	....	....	....	6	+11.25	9	+7.25	11.5	+3.75	14	+2.5
Ind. Harbor, Ind. Y1	...	...	....	....	....	....	16.5	+0.75	19.5	3.25	22	6.75	24.5	8
Lorain, O. N3	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Sharon, Pa. S4	17.5	+11	9	+16.5	0.5	+24	...	...	...	...	...	...	...	...
Sharon, Pa. M6	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Sparrows Pt., Md. B2	23	+ 5.5	15	+10.5	7.5	+17	21.75	4.5	24.75	8.5	27.25	12	29.75	13.25
Youngstown R2, Y1	...	...	....	....	....	....	17.5	0.25	20.5	4.25	23	7.75	25.5	9
Wheatland, Pa. W9	23	+ 5.5	15	+10.5	7.5	+17	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
Aliquippa, Pa. J5	26	10	26.5	10.5	28	10.75	28	10.75	....	...	....	...
Alton, Ill. L1	24	8	24.5	8.5	26	8.75	26	8.75	....	...	....	...
Benwood, W. Va. W10	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	0.75
Etna, Pa. N2	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	0.75
Fairless Hills, Pa. N3	24	8	24.5	8.5	26	8.75	26	8.75	16.5	+1.25	16.5	+1.25
Fontana, Calif. K1	14.5	+1.5	15	+1	16.5	+0.75	16.5	+0.75	7	+10.75	7	+10.75
Ind. Harbor, Ind. Y1	25	9	25.5	9.5	27	9.75	27	9.75	17.5	+0.25	17.5	+0.25
Lorain, O. N3	26	10	26.5	10.5	28	10.75	28	10.75	....	...	....	...
Sharon, Pa. M6	26	10	26.5	10.5	28	10.75	28	10.75	....	...	....	...
Sparrows Pt., Md. B2	30.25	14.25	30.75	14.75	32.25	15	32.25	15	23.5	5.75	23.5	5.75
Youngstown R2, Y1	26	10	26.5	10.5	28	10.75	28	10.75	18.5	0.75	18.5	0.75
Wheatland, Pa. W9	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75

*Galvanized pipe discounts based on current price of zinc (12.50c, EastSt. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	H.R. Strip	Shapes; H.R. & C.F. Bars; Wire	Plates	Sheets	C.R. Strip; Flat Wire
201	17.00	21.50	....	....	31.00	....	....	42.25	39.00
202	18.25	24.00	31.00	36.25	33.50	36.75	38.75	42.50	42.50
301	17.75	22.25	....	36.75	32.00	38.00	....	44.25	41.00
302	19.00	24.75	32.00	37.25	34.50	38.25	40.25	44.50	44.50
302B	20.25	26.50	33.00	37.25	37.75	38.25	40.25	47.00	47.00
303	....	26.75	34.75	40.00	....	41.00	....	....	....
304	20.25	26.00	33.75	39.00	37.25	40.25	43.00	47.25	47.25
304L	....	....	38.75	44.00	42.25	45.25	48.00	52.25	52.25
305	21.75	28.25	....	39.50	40.25	40.25	43.50	50.25	50.25
308	22.00	29.00	38.50	44.25	41.25	45.50	49.75	52.00	52.00
309	29.50	38.25	46.75	53.50	53.50	54.75	58.25	67.00	67.00
309S	31.50	41.00	51.00	59.00	58.50	60.25	63.75	74.00	74.00
310	37.25	48.00	62.25	72.25	68.50	73.50	75.25	78.75	78.75
314	....	....	....	....	....	....	75.25	....	....
316	31.50	40.25	51.25	59.50	58.25	60.75	64.00	68.25	68.25
316L	....	....	56.25	64.75	63.25	65.75	69.25	73.25	73.25
317	37.25	48.25	62.75	72.75	73.50	74.50	77.00	83.75	83.75
321	25.00	32.00	38.25	44.00	44.25	45.25	49.25	54.25	54.25
18-8CbTa	29.25	38.00	45.75	52.25	53.25	53.50	58.00	66.50	66.50
403	....	....	28.75	32.75	....	34.00	36.25	....	44.00
405	17.50	23.00	26.75	31.00	32.25	32.00	33.75	42.25	42.25
410	15.00	19.50	25.50	29.50	28.00	30.50	31.75	36.25	36.25
416	....	....	26.00	30.00	....	31.00	....	....	....
420	23.50	30.25	31.00	36.00	37.75	37.25	40.75	56.00	56.00
430	15.25	19.75	26.00	30.00	28.75	31.00	32.25	36.75	36.75
430F	....	....	26.50	30.50	....	31.50	....	....	....
431	16.00	20.50	26.50	30.50	29.75	31.50	33.00	38.00	38.00
446	....	....	35.50	40.50	53.25	42.00	43.25	63.25	63.25

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; Alloy Tube Div., Carpenter Steel Co.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Tube Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sharon Steel Corp.; Sawhill Tubular Products Inc.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

Clad Steel

	Plates: Carbon Base 10%	Plates: Carbon Base 20%	Sheets Carbon Base 20%
Stainless:			
302	....	....	30.50
304	30.30	36.05	32.50
304-L	32.30	37.95	....
310	41.30	47.00	....
316	35.50	41.40	47.00
316-L	40.00	46.10	....
316-CB	41.15	48.45	....
321	32.00	37.75	37.25
347	34.40	41.40	48.25
405	25.80	33.35	....
410	25.30	32.85	....
430	25.30	32.85	....
Inconel	49.45	65.45	....
Nickel	41.05	55.65	....
Nickel, Low Carbon	43.25	60.05	....
Monel	42.35	56.35	....
Copper*	....	....	46.00

	Strip, Carbon Base—Cold Colled: 10%	Both Sides
Copper*	26.60	33.00

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular carbon	0.275	5%Cr Hot Work	0.430-0.46
Extra Carbon	0.330	W-Cr Hot Work	0.45
Special Carbon	0.390	V-Cr Hot Work	0.47
Oil Hardening	0.430	Hi-Carbon-Cr	0.77

Grade by Analysis (%)

W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	...	4.09
18.25	4.25	1	4.75	...	2.305-2.47
18	4	2	9	...	2.675-2.677
18	4	2	....	...	1.76
18	4	1	....	...	1.60
13.75	3.75	2	5	...	2.24
13.5	4	3	....	...	1.86
9	3.5	..	....	...	1.18
6	4	2	....	5	1.10
6	4	3	....	6	1.35
1.5	4	1	....	8.5	0.96

Tool steel producers include; A4, A8, B2, B8, C4, C5, C13, C18, D4, F2, J3, M14, S8, U4, V2 and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Alabama City, Ala. R2	54.50	55.00‡	....	....
Birmingham R2	54.50	55.00‡	....	....
Birmingham U6	....	55.00‡	59.00†	....
Woodward, Ala. W15	54.50	55.00‡	59.00	....
Cincinnati, deld.	....	62.70	....	....
Buffalo District				
Buffalo H1, R2	58.50	59.00	59.50	60.00
Tonawanda, N.Y. W12	58.50	59.00	59.50	60.00
Tonawanda, N.Y. T9	....	59.00	59.50	60.00
Boston, deld.	69.15	69.65	70.15	....
Rochester, N.Y. deld.	61.52	62.02	62.52	....
Syracuse, N.Y. deld.	62.62	63.12	63.62	....
Chicago District				
Chicago I-3	58.50	59.00	59.00	59.50
Chicago R2	58.50	....	59.00	....
Gary, Ind. U5	58.50	....	59.00	....
Chicago, Ill. Y1	58.50	59.00	59.00	59.50
Chicago, Ill. U5, W14	58.50	....	59.00	59.50
Milwaukee, deld.	60.67	61.17	61.17	61.67
Muskegon, Mich., deld.	....	65.30	65.30	....
Cleveland District				
Cleveland A7, R2	58.50	59.00	59.00	59.50
Akron, O., deld.	61.25	61.75	61.75	62.25
Lorain, O. N3	58.50	....	....	59.50
Mid-Atlantic District				
Bethlehem, Pa. B2	60.50	61.00	61.50	62.00
New York, deld.	....	64.78	65.28	....
Newark, deld.	63.52	64.02	64.52	65.02
Birdsboro, Pa. B10	60.50	61.00	61.50	62.00
Chester, Pa. C31	54.50	55.00	55.50	....
Philadelphia, deld.	56.16	56.66	57.16	....
Steelton, Pa. B2	60.50	61.00	61.50	62.00
Swedeland, Pa. A3	60.50	61.00	61.50	62.00
Philadelphia, deld.	62.16	62.66	63.16	63.66
Troy, N.Y. R2	60.50	61.00	61.50	62.00
Pittsburgh District				
Neville Island, Pa. P6	58.50	59.00	59.00	....
Pittsburgh (N&S sides), Aliquippa, deld.	....	60.37	60.37	60.87
McKees Rocks, deld.	....	60.04	60.04	60.54
Lawrenceville, Homestead, Wilmerding, Monaca, deld.	....	60.66	60.66	61.16
Verona, Trafford, deld.	60.69	61.19	61.19	61.69
Brackenridge, deld.	60.95	61.45	61.45	61.95
Essemer, Pa. U5	58.50	....	59.00	59.50
Clairton, Rankin, S. Duquesne, Pa. U5	58.50	....	....	....
McKeesport, Pa. N3	58.50	....	....	59.50
Midland, Pa. C18	58.50	....	....	....

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Youngstown District				
Hubbard, O. Y1	....	....	59.00	....
Sharpsville, Pa. S6	58.50	....	59.00	59.50
Youngstown Y1	....	....	59.00	59.50
Youngstown U5	58.50	....	....	59.50
Mansfield, O., deld.	63.40	....	63.90	64.40
Duluth I-3	58.50	59.00	59.00	59.50
Erie, Pa. I-3	58.50	59.00	59.00	59.50
Everett, Mass. E1	60.50	61.00	61.50	....
Fontana, Calif. K1	64.50	65.00	....	....
Geneva, Utah C11	58.50	59.00	....	....
Granite City, Ill. G4	60.40	60.90	61.40	....
Ironton, Utah C11	58.50	59.00	....	....
Lone Star, Texas L6	52.00	55.00*	52.50	....
Minnequa, Colo. C10	60.50	61.00	61.50	....
Rockwood, Tenn. T3	....	55.00‡	59.00	....
Toledo, O. I-3	58.50	59.00	59.00	59.50
Cincinnati, deld.	64.26	64.76	....	....

*Phos. 0.51-0.75; $56, Phos. 0.31-0.50.
†Phos., 0.30 max.
‡Intermediate (Phos. 0.31-0.69%), $56.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.05% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.5% Si; 75 cents for each 0.50% Mn over 1%)

Jackson, O. G2, J1	$67.50
Buffalo H1	68.75

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.50 Si to 18%; $1 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

Niagara Falls, N.Y. P15	$80.50
Keokuk, Iowa, (Open-hearth & Fdry, freight allowed K2)	87.50
Keokuk, O.H. & Fdry, 12½ lb piglets, 16% Si, frgt allowed K2	90.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles, Tenn. T3 (Phos. 0.035 max.)	$72.50
Steelton, Pa. B2 (Phos. 0.035 max.)	66.50
Philadelphia, deld.	70.05
Troy, N.Y. R2 (Phos. 0.035 max.)	66.50
Cleveland A7 (Intermediate) (Phos. 0.036-0.075 max.)	63.50
Duluth I-3 (Intermediate) Phos. 0.036-0.075 max.)	63.50
Erie, Pa. I-3 (Intermediate) (Phos. 0.036-0.075 max.)	63.50

Warehouse Steel Products

Representative prices, cents per pound subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except Buffalo, Cleveland, Erie, 30 cents; Chicago, Milwaukee, St. Louis, St. Paul, Detroit, Cincinnati, Pittsburgh, 25 cents; Philadelphia, New York, Baltimore, Boston, San Francisco, Los Angeles, and Portland, Oreg., 10 cents; Atlanta, Houston, Seattle, Spokane, Wash., no charge.

	SHEETS				STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot Rolled	Cold Rolled	Galv. 10 Ga.†	Stainless Type 302	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	7.14	8.20	8.87	....	7.40	...	7.42	9.39	....	7.63	7.49	9.48
Baltimore	7.03	8.32	9.10	....	7.65	...	7.61	8.62[3]	13.44	7.93	7.21	8.87
Birmingham	6.80	7.90	8.85	....	7.06	...	7.08	9.35	....	7.28	6.99	9.10
Boston	7.70	8.81	10.27	45.67	7.96	...	7.83	9.53	14.45	8.13	7.89	9.36
Buffalo	6.80	8.05	9.77	....	7.15	...	7.10	7.90	13.10	7.40	7.15	8.70
Charlotte, N. C.	6.95	7.80	8.69	....	6.90	...	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.80	7.93	8.50	46.55	7.06	...	7.08	7.75	12.85	7.28	6.99	8.46
Cincinnati	6.92	7.92	8.90	46.10	7.30	...	7.32	8.05	13.09	7.75	7.28	8.71
Cleveland	6.80	7.93	8.85	....	7.16	...	7.14	7.85	12.91	7.61	7.16	8.63
Detroit	6.99	8.12	8.78	43.50	7.34	...	7.36	8.04	13.05	7.75	7.27	8.65
Erie, Pa.	6.80	7.90	8.85	....	7.15	...	7.08	7.85	....	7.40	7.15	8.63
Houston	7.85	8.75	10.49	....	8.15	...	8.25	9.85	14.00	8.20	7.80	9.20
Los Angeles	8.05	10.00	11.00	....	8.35	...	8.05	11.25	14.25	8.30	8.05	10.25
Milwaukee	6.89	8.02	8.59	....	7.15	...	7.17	7.94	12.94	7.45	7.08	8.55
Moline, Ill.	7.15	8.28	8.85	....	7.41	...	7.43	8.10	....	7.63	7.34	...
New York	7.46	8.68	9.44	44.95	8.07	...	7.96	9.48	13.28	7.99	7.76	9.19
Norfolk, Va.	7.25	...	...	....	7.65	...	7.65	9.50	....	7.95	7.45	8.95
Philadelphia	7.14	8.42	9.35	45.98	7.67	9.02	7.64	8.46	13.16	7.74	7.37	8.69**
Pittsburgh	6.80	7.93	9.20	48.67	7.16	...	7.08	7.85	12.85	7.28	6.99	8.46
Portland, Oreg.	7.80	8.80	10.65	....	8.00	...	7.95	11.80	15.00	7.85	7.75	9.60
Richmond, Va.	7.00	...	9.47	....	7.65	...	7.70	8.85	....	7.95	7.20	9.10
St. Louis	7.09	8.22	9.19	43.89	7.35	...	7.37	8.14	13.14	7.68	7.28	8.75
St. Paul	7.46	8.59	9.16	....	7.72	...	7.74	8.51	13.51	7.94	7.65	9.12
San Francisco	8.10	9.65	10.15	51.65	8.35	...	8.05	11.20	14.25[3]	8.25	8.05	10.25
Seattle	8.55	10.40	10.80	54.00	8.65	...	8.35	11.70	14.60	8.30	8.20	10.10
Spokane	8.55	11.00[7]	10.80	....	9.05	...	8.35	11.80	15.35	8.30	8.20	10.60
Washington	7.50	8.79	7.97	....	8.12	...	8.08	9.09	....	8.40	7.68	9.34

Prices do not include gage extras; †prices include gage and coating extras (based on 12.50-cent zinc), except in Birmingham (coating extra excluded); ‡includes 35-cent special bar quality extras; **⅛-in. and heavier; ††as annealed; §§under ½-in.

Base quantities, 2000 to 4999 lb except as noted: Cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York and Boston, 10,000 lb, and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb; [2]—500 to 9999 lb; [3]—400 to 999 lb; [4]—4000 lb and over; [5]—1000 to 1999 lb; [6]—1000 lb and over; [7]—1500 to 3999 lb; [8]—2000 to 3999 lb; [9]—f.o.b. local delivery in lots of 10,000 lb and over.

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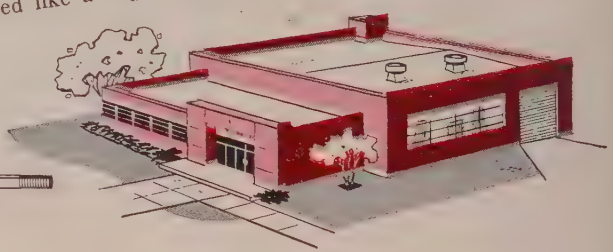
when I do business with Lamson & Sessions"

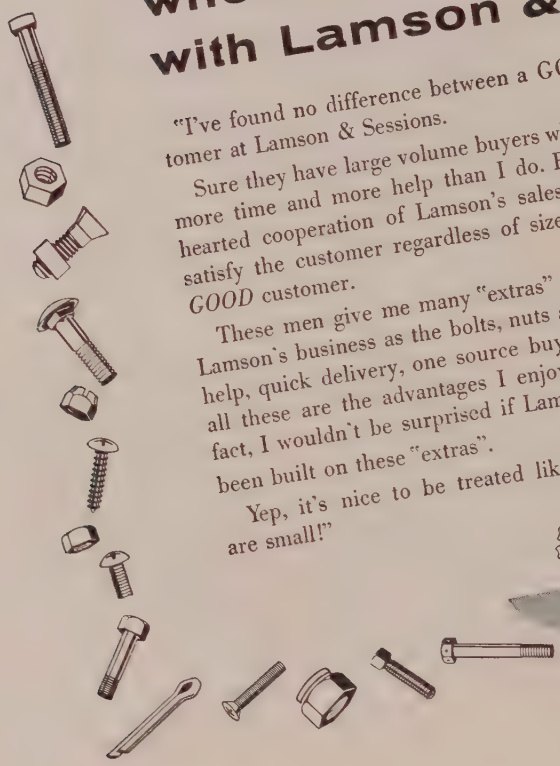
"I've found no difference between a GOOD customer and a BIG customer at Lamson & Sessions.

Sure they have large volume buyers who perhaps require more service, more time and more help than I do. But I, too, enjoy the same wholehearted cooperation of Lamson's salesmen whose only incentive is to satisfy the customer regardless of size. To them *EVERY* customer is a *GOOD* customer.

These men give me many "extras" that seem to be as much a part of Lamson's business as the bolts, nuts and screws themselves. Engineering help, quick delivery, one source buying, pleasant congenial people . . . all these are the advantages I enjoy when I do business with them. In fact, I wouldn't be surprised if Lamson's leadership in the industry has been built on these "extras".

Yep, it's nice to be treated like a "big shot" even when my orders are small!"





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201-202:

New Stainless Steel Types

hese high-manganese types are assigned numbers, get eparate price schedules. Characteristics nearly identical o Types 301 and 302 assure them of place in market

HE STAINLESS steel family is increasing with the addition of two new iembers: Types 201 and 202.

Conceived as substitutes for high-ickel types, the new members—ontaining about 17 per cent chrome, per cent nickel and 7 per cent manganese—are destined to take an important place in the industry. Not nly will they help conserve the supply of critically short nickel, they lso will save fabricators as much s 2 cents a pound in many applications now taking Types 301 and 02. (See price comparisons below.)

Joint Effort—The steels are not rand new. Work began on the development of low nickel stainless during World War II, resulting in a igh-manganese type which was used n substantial quantities. When nickel ecame available, most customers reerted to the 300 series. When government controls were on and civilan use was restricted to low-nickel ypes, the search for a substitute ontinued. The new types were deeloped through the co-operation of everal steel producers, Budd Co., Philadelphia, and the American Iron Steel Institute's Technical Committee on Stainless Steel.

Recognition of the types did not ollow until the AISI assigned new umbers to them last June. Since hen, producers have been issuing eparate price tables for them. Before the new schedules, users paid the same price for 201 and 202 and the types for which they were substituted.

New Patterns—Because Types 201 and 202 are completely satisfactory in many products made with Types 301 and 302, producers are of the opinion that once a user has switched to the lower-cost steel, he will stick with it. This means a change in the marketing patterns of the 300 series. One official hazarded a guess that Type 201 eventually could capture as much as 75 per cent of the Type 301 market; and Type 202 could get between 50 and 60 per cent of the Type 302 market.

Why? The new are not inferior to the older types. Budd has used them on truck bodies and railroad cars for five years and found no significant corrosion. They've also been exposed to severe industrial atmospheres up to three years with no serious corrosion problems. Their welding and fabrication characteristics are nearly identical with those of 301 and 302. The same procedures and equipment can be used for both the old and the new types.

Not Universal—But 201 and 202 will not completely replace 301 and 302. In some corrosion conditions, there still is nothing like nickel. And a fabricator with considerable investment in the nickel types may find it too expensive to stock the manganese types even if they are cheaper. Dual inventory can be costly.

The well-rooted misconception—if you don't get at least 6 per cent nickel in your stainless, it isn't good enough—may be the biggest deterrent to the use of the new types.

With the nickel situation as bad as it is, and apparently getting worse, efforts are continuing to find substitutes for other nickel-bearing stainless steels. One or two new types in the experimental stage hold promise of adding more types to the 200 series. The end result could be an easier tone in the nickel and stainless steel markets.

How the New Compares with the Old

Stainless Products—Mill Prices, Cents Per Pound*

AISI Type No.	Rerolling Ingots	Rerolling Slabs and Billets	Forging Billets	Seamless Tube Billets	H.R. Strip	Strl. Shapes, H.R. Bars, C.F. Bars and Wire	Plates	Sheets	C.R. Strip** and Flat Wire
201	17.00	21.50	....	....	31.00	....	....	42.25	39.00
202	18.25	24.00	31.00	36.25	33.50	36.75	38.75	42.50	42.50
301	17.75	22.25	....	36.75	32.00	38.00	....	44.25	41.00
302	19.00	24.75	32.00	37.25	34.50	38.25	40.25	44.50	44.50

U.S. Steel Corp.
*For C. R. strip at Gary, Ind., add 0.25 cent

Plates . .

Plate Prices, Page 126

Plate producers are striving to meet inflated demand from construction, shipbuilding and transportation industries, but they are falling further behind schedules. Fourth quarter orders with firm delivery dates are being pushed back a month. Most October orders will be shipped in November or December.

Some premium-priced tonnage can be had for delivery this fall against new orders. In general, capacity is well absorbed for the remainder of the year despite the fact that at least two mills quoting at the going market have not officially opened their books for the closing weeks of the year—pending a final effort to bring some semblance of balance to their order books. However, their capacity is spoken for, and only regular customers have a chance of getting scheduled—and only then on a basis of something under their normal pattern.

The larger of the two plate mills at Claymont, Del., which has been down for several weeks for repairs, is expected to resume operations around the middle of this month.

Shipbuilding backlogs are bolstered by Navy contracts for 6 of 11 ships awarded New England yards: Bath Iron Works, destroyer and frigate; Portsmouth, N. H., Navy yard, two submarines, one nuclear; and Electric Boat Co., Groton, Conn., two submarines, one nuclear. Plates for these vessels will not be required until the first half of next year, but slightly more tonnage is currently ordered for destroyers previously booked. San Francisco Bay area yards also have been assigned millions of dollars of shipwork.

The Worcester carbuilding shop will need more orders before the year-end. Passenger cars for the Long Island and New Haven Railroads will be complete by late December, and

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plate and other steel shipments should be completed by Oct. 1.

Railroad car tonnage is taking up more of the fourth-quarter capacity left by some producers for contingencies. Car shops are doubtful deliveries will be met.

Fuel oil storage tanks also are taking a heavier volume of plates.

On the West Coast, plate producers have closed October books and are quoting delivery dates as far advanced as February on large jobs. Inquiries continue to flow at a higher level than at any time since early spring when seasonal factors were at their peak.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 126

U. S. Steel Export Co., New York, increased its export base price on concrete reinforcing bars from 4.73c to 5.02c, New York, Philadelphia and Baltimore, with freight included to those points.

Steel Bars . . .

Bar Prices, Page 126

Pressure from the automotive industry for fourth-quarter delivery of bars is increasing. Bars are as tight as they were in early August. No decline in sales developed when the market passed through a slack season in ordering by the automotive and appliance industries.

The chief problem facing barmakers is getting out enough production. Their order backlogs continue to increase more than the rate of shipments, owing to maintenance requirements at the mills and unusually hot weather at several producing points.

A substantial volume of hot and cold-finished carbon bar tonnage has been rejected for fourth quarter. Most producers, sold out through the balance of this year, are hard put to obtain enough semifinished steel to meet delivery promises. They haven't opened books for the first quarter.

In most instances, bar consumers are operating with low inventories. They are managing to maintain operations, frequently drawing from stock to supplement delayed deliveries. This applies particularly to forgers and screw machine shops. Bolt shops, as a rule, have fair stocks.

Alloy bar deliveries are relatively easy, with some producers of hot alloy stock still able to promise shipments in October. More grades are moving out, however, because of the heavier load on processing equipment.

Readjustment of bar schedules by one eastern producer results in a re-

with cooking utensils fabricated from

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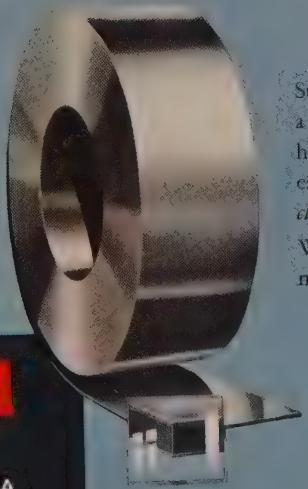

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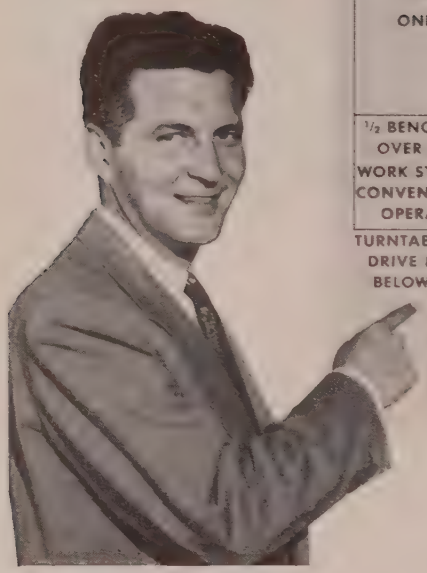
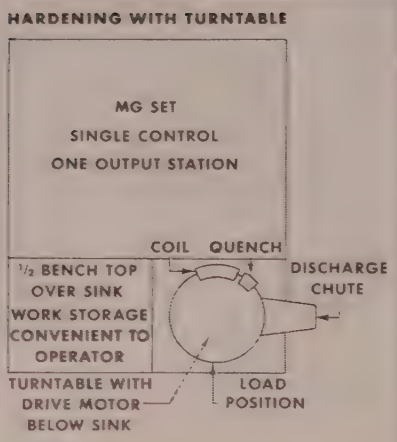
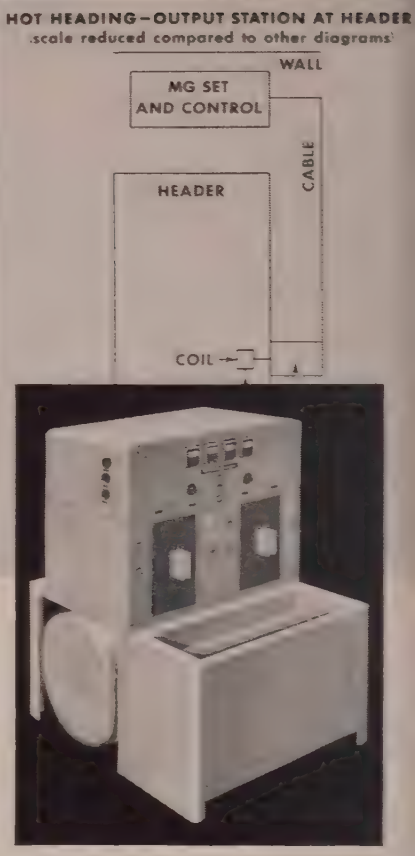
New 30-kw

induction heater . . .



PLAN VIEWS





32 arrangements to meet your own production setups

Simplified building-block design of the new Westinghouse 30-kw induction heater brings you unequaled flexibility. You get 32 regular combinations, plus a number of special arrangements to fulfill your low-power induction heating jobs. Result: induction heating changeovers can be made quickly, easily to adapt to your varying production arrangements.

Easy To Use—front of worktable, free of controls, can be used for mounting work-handling equipment. Instruments at eye level for easy readability. Buy the equipment you want, adapt it when your needs change: single to two-station operation—sink to bench top—high-voltage to low-voltage output—grouped as a compact unit to remotely located output stations.

Versatile—you get a custom-built installation of standardized equipment to handle a wide variety of applications. Unit ideal for hardening, annealing, brazing or soldering.

Equipment consists of four basic units: (1) 30-kw, water-cooled, 10,000-cycle m-g set, (2) generator control cabinet, (3) high-frequency output cabinet, (4) worktable.

For more information about improving your induction heating operations, call *The Man With The Facts*—your Westinghouse sales engineer. Ask him for your copy of booklet B-6555, or write Westinghouse Electric Corporation, 3 Gateway Center, Pittsburgh 30, Pa. J-02298

YOU CAN BE **SURE**...IF IT'S

Westinghouse

n of some orders taken as far
k as the second quarter. Consum-
hope to get this tonnage on oth-
mill books.

Tight bar supply is traced back to
st and second-quarter buying policy
many consumers that were main-
ning a 30-day stock. Bar ship-
nts became extended and orders
ared closer to 90-day requirements
re placed.

emifinished Steel . . .

Semifinished Prices, Page 126

India is in the market for 7200
ns of spring steel billets and is
king for bids. Indian Supply Mis-
on also is taking bids on 30,000
ns of mild steel billets, estimates
be in Calcutta by Sept. 15.

heets, Strip . . .

Sheet & Strip Prices, Pages 127 & 128

Sheet consumers are unable to
ace additional tonnage for delivery
is year, although many are still
ying. In the past month mills
aven't been able to keep operating
top capacity and have fallen be-
nd in deliveries.

Pittsburgh mills have had no gov-
rnment requests for emergency ship-
ents of sheet to flooded areas in
e East, but they have received
mergency requests for galvanized
heet to be used in construction. The
overnment's grain bin program is
equiring larger shipments of the gal-
anized product. As the government's
eeds are considerable, this delays de-
veries to civilian consumers in non-
mergency areas.

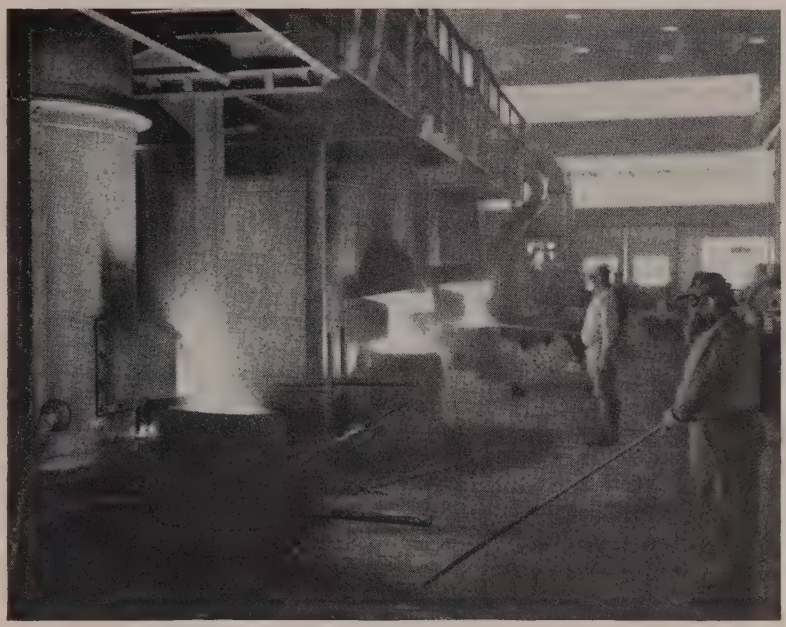
Sheet producers expect a tighter
upply situation when automakers in-
rease their orders this fall. Manu-
acturers of flat-rolled products free-
y predict 100 per cent of capacity
perations through this year.

Most producers haven't opened
ooks for the early months of next
ear, except in some specialties
vhich haven't been moving quite so
vell as other grades. As matters
tand, producers will have a carry-
over at the end of 1955 on the ma-
or tonnage items and on electrical
sheets and enameling stock.

One mill has issued preliminary
allotments of sheets for the first
quarter to New England customers.
They are smaller than those for the
fourth quarter, although one month
s blocked out for the latter period.
Allowance also is made for carry-
overs entering 1956. In effect this
means booking six months ahead.
Substantial cutbacks by the automo-
tive industry could ease pressure.
One or two parts suppliers have can-
celed orders, due to model changes

BERYLLIUM COMES OF AGE

New product development, integrated production facilities, new marketing techniques mark wide acceptance of beryllium copper alloys



ARC FURNACES make possible high production of master alloy, out of which other beryllium copper forms are made.

Twenty years ago beryllium copper was an experimental alloy. Today it is a production material in widespread demand, used for its unique combination of strength, conductivity, formability, and dozens of other valuable properties. It is used in production tools, such as giant flash welders; in consumer products, such as refrigerators and cars; in developments as up to date as nuclear energy.

The Beryllium Corporation, world's most integrated producer of beryllium copper, foresaw this demand and took steps to meet it.

New sources of beryl ore, raw material of the beryllium industry, were sought out—with such success that the Government now says resources are adequate for both civilian and defense needs.

New alloys were developed. "Beryldur," for example, is a new low-cost alloy offering a combination of strength and conductivity not hitherto available.

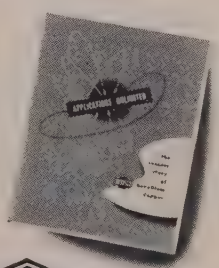
A multimillion-dollar plant expansion program made possible greater production, increased the range of sizes and shapes, tightened tolerance ranges.

At the same time, mill service was supplemented with conveniently located warehouse stocks of "Berylco" Beryllium Copper. Leading nonferrous distributors throughout the United States and Canada now stock "Berylco" in a wide range of sizes for immediate delivery.

Write today for sample material or engineering help.

QUALITY CONTROL FOR MASS PRODUCTION. This new direct-reading spectrometer analyzes beryllium alloys while they are still molten.

APPLICATIONS UNLIMITED. This 16-page booklet describes scores of typical applications for beryllium copper. Send for your free copy . . . today.



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The Stant Manufacturing Company of Connorsville, Indiana is another progressive manufacturer added to a large and growing list of companies palletizing their products for safe, economical shipment with Stanley Steel Strapping.

FORMERLY: Stant shipped its taillight assemblies in numerous small corrugated cartons sealed with gummed tape, each carton requiring interior packing.

NOW: Stant uses the Stanley Steel Strapping System. ***75*** assemblies now are packed into ***one*** partitioned carton and strapped to an expendable pallet. This palletized unit is easily, safely handled in storage or en route to customer ***because*** it is ***reinforced*** and ***protected*** by the "sealed strength" of Stanley Steel Strapping. And the ***Plus*** cost-saving benefits are: less interior packing, fewer cartons, less handling and manpower required.

Stanley has a complete line of steel strapping hand and power tools for easier, faster, safer packing and shipping of boxes, cartons, crates, coils, bundles, skid-loads and pallet-loads.

☐ Stanley ACE Strapping Tool with Automatic Seal Feed (in use above)

☐ Stanley Electric Skid Magazine Tool

☐ Stanley Power Strapping Tool (Models SPS-1, SPS-2)

☐ Stanley Electric Car Banding Tool (Built-in Shear Optional)

Call in the Stanley Steel Strapping Specialist. He'll show *you* how to pack, move and ship more goods in less time at lower cost. Mail coupon for free catalog.

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THE STANLEY WORKS

STANLEY STEEL STRAPPING DIVISION, 1059-S LAKE ST., NEW BRITAIN, CONN.
Telephone: BAldwin 9-2021

☐ *Please send Catalog SS-9C.* ☐ *Please have Representative call.*

NAME_____
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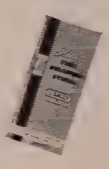
CITY_____ ZONE____ STATE_____



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STANLEY STEEL STRAPPING • STANLEY STEEL

involving accessories, but not until 1956 model production is well advanced are sheet orders likely to ease materially.

Structural Shapes . . .

Structural Shape Prices, Page 126

Contracts for fabricated structural steel are heavy in the East, but the volume being estimated is even larger. A large part of tonnage now being estimated will not be fabricated until the second quarter of next year. Fabricated structural steel prices are higher but they do not cover fully the increased cost of plain material and labor.

Supply of wide flange beams and standard structurals is critical. More shops are operating below planned schedules, lacking plain material.

Some structural mill schedules were disrupted by the floods in the East, one mill lost about one week's production and several must make adjustments to take care of emergency orders required to rebuild bridges and other structures. While aggregate emergency tonnage is not large, the volume is sufficient to adversely affect overloaded mills. Large inquiries for plain material for November-December delivery are being held up by the largest producer supplying eastern shops, pending clarification of third-quarter carryover.

In addition to 60,000 tons placed recently for two stamping shops, expansion by the automotive industry accounts for another 62,000 tons. American Bridge Division, U. S. Steel Corp., booked close to 30,000 tons for a Ford manufacturing plant. In the flood area, Bailey bridges are being erected for the emergency period.

Wire . . .

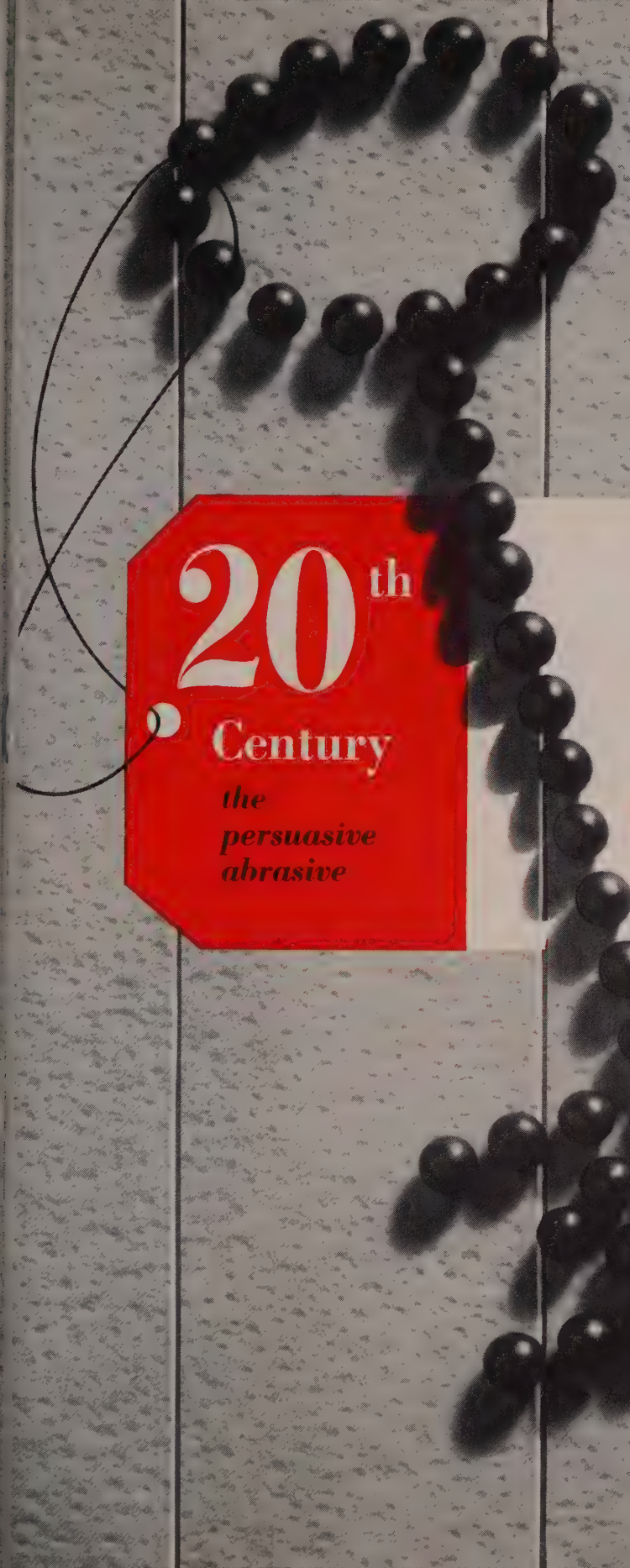
Wire Prices, Pages 128 & 129

Construction wire products are badly needed to repair flood damage in the East. Full needs won't become known until the debris is cleared away and rebuilding begins. Wire producers outside the stricken area have been alerted by eastern offices to expect heavier demand for merchant wire products soon.

Wheeling Steel Corp. has made emergency shipments of cut nails to eastern areas from its Wheeling, W. Va., plant. Several other mills have made similar shipments of wire products.

Wire mill production in New England is getting back to normal production. American Steel & Wire is pouring steel from two furnaces at its South Works, Worcester, Mass., but will be set back two to three

(*Please turn to page* 142)



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Current Ferroalloy Quotations

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si), Carlot per gross ton $86, Palmerton, Pa.; $87 Clairton and Duquesne, Pa.
(16 to 19% Mn) $84 per ton, Palmerton, Pa.; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.) Base price per net ton $190, Clairton, Duquesne, Johnstown and Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, Philo, O.; Sheffield, Ala.; Portland, Oreg., and Tacoma, Wash. Add or subtract $2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.

(Mn 79-81%) Lump $198 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 76%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Reguar Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 29.95c per lb of contained Mn, carload packed 30.7c, ton lots 31.8c, less ton 33c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max. 0.30% C, 3.5c for max 0.50% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lots 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carloads, 30c; 2000 lb to min carloads, 32c; 250 lb to 1999 lb 34c. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or to any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-85%). Contract, lump, bulk 1.50% C grade, 18-20% Si, 11.00c per lb of alloy, carload packed 11.75c, ton lots 12.65c, less ton 13.65c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37 f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr; c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochreme: (Cr 67-72%). Contract, carload, lump, bulk, C 0.025% max. (Simplex 34.50c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 M x D, bulk, 26.25c per lb contained Cr. Packed, c.l. 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low-Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carloads, packed 8 M x D, 18.35c per lb of alloy, ton lot 19.2c; less ton lot, 20.4c, delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max). Contract, carload, lump, 4" x down and 2" x down, bulk, 24.75c per lb of contained chromium plus 12c per pound of contained silicon; 1" x down, bulk 24.90c per pound of contained chromium plus 12.2c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min 97% Cr and 1% Fe). Contract, 1" x D; packed, max 0.50%, carload $1.16, ton lots $1.18; less ton $1.20. Delivered. Spot, add 5c. Prices on 0.10% carbon grades, add 9c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 50-55%, Si 2-3.5% max, C 0.5-1% max) $3.10. **Primos and High Speed Grades** (V 50-55%, Si 1.50% max, C 0.20% max) $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12c per lb of contained Si, carload packed 13.6c, ton lot 15.5c, less ton 16.7c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.7c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 13.5c per pound contained silicon; carload packed 14.85c; ton lots, 16.05c; less ton, 17.4c, delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.4c per lb of contained Si, carload packed 15.7c, ton lot 16.85c, less ton 18.1c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 17.25c per lb of contained Si, carload packed 18.45c, ton lot 19.4c, less ton 20.45c. Delivered. Spot, add 0.25c.

Silicon Metal: (Mn 97% Si and 1% max Fe). C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.25c per lb of alloy, ton lots packed 10.15c, 200 to 1999 lb 10.50c, smaller lots 11c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 25.25c per lb of alloy, ton lot 26c, less ton 27.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 85c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5%-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%). Contract, lump, carloads 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3⅝ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.05c per lb of briquet. carload packed 16.95c, ton 17.75c, less ton 18.65c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 11.85c per lb of briquet, c.l. packaged 12.85c, ton lot 13.65c, less ton 14.55c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.45c per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.55c per lb of briquet. Packed c.l. 7.55c, ton lot 8.35c, less ton 9.25c. Delivered. Spot, add 0.25c.

(Small size—Weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.7c. Packaged c.l. 7.7c, ton lot 8.5c, less ton 9.4c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $3.45 per lb of contained W; 2000 lb W to 5000 lb W, $3.55; less than 2000 lb W, $3.67, delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $6.80-$6.90 per lb of contained Cb. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb plus Ta 60% min. C 0.30% max). Ton lots, 2" x D, $4.65 per lb of contained Cb plus Ta, deld.; less ton lots $4.70.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carloads packed 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5.7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ⅛" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 5: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.50c per lb of alloy, ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 16.6c per lb of alloy; ton lots 18.10c; less ton lots 19.35c, f.o.b. Niagara Falls; freight allowed to St. Louis.

Siminal: (Approx. 20% each Si, Mn, Al; bal, Fe). Lump, carload, bulk 15.50c. Packed c.l. 16.50c, 2000 lb to c.l. 16.75c, less than 2000 lb 17.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Sigio, Tenn. $90 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, in 200-lb containers, f.o.b. Langeloth, Pa., $1.46 in all sizes except powdered which is $1.57; Washington, Pa., furnace, any quantity $1.46.

Technical Molybdic-Oxide: Per lb contained Mo, f.o.b. Langeloth, Pa., $1.25 in cans; in bags, $1.24, f.o.b. Langeloth, Pa.; Washington, Pa. $1.24.

OSEPH P. SPANG JR.

Portrait by Fabian Bachrach

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JOSEPH P. SPANG JR., ***President***
The Gillette Company

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The Metalworking Weekly

PUBLIC SERVICE ADVERTISING COUNCIL

(*Concluded from page* 138)

weeks on numerous finished wire products. Nonintegrated mills in Worcester suffered less, notably Thompson Wire Co., which has resumed full operations.

Most wire consumers recovered quicker than the mills. Some have replaced delayed tonnage with other producers, including some in Pittsburgh. A few will have to curtail operations due to lack of wire. This tangles an already bulging order backlog—inquiries for more grades are referred to mills before acceptance.

Business in manufacturers wire remains brisk, with deliveries ranging from 10 to 12 weeks in some instances.

Warehouse . . .

Warehouse Prices, Page 131

Distributors are having increasing difficulty getting enough galvanized sheet, plate, structural shapes and construction wire from the mills. These products are being shipped east on emergency priority. Some warehouses in the stricken area are having difficulty in receiving and making shipments because of transportation difficulties.

Bar supply continues to tighten. Distributors expect this product, as well as others, to stay that way through most of the fourth quarter.

Tonnagewise, warehouse business practically stayed at the July rate in August and is expected to be at least as active in September and October. Maintaining inventories is the greatest problem of distributors. They have been unbalanced for weeks.

Tubular Goods . . .

Tubular Goods Prices, Page 130

Except for some slowness in shipments of pressure tube, demand for tubular products is strong. From the customers' standpoint, the market is tighter than it was in the second quarter.

Merchant tubemakers report active inquiry, but are hampered by the slow movement of skelp from steel mills. Specialties are extended close to six weeks; on alloys, when steel is not available, delivery is 12 to 14 weeks. Stainless also is in the latter category.

Buttweld pipe shipments are close to schedule, with distributors placing orders for October. Emergency tonnages can be shipped during September to New England.

Cast iron pipe agencies in the Pacific Northwest report a lull in demand, following an exceptionally large business volume earlier in the year. Renewed demand is expected in the last quarter.

Electrode Prices Advance

Due to higher manufacturing costs, National Carbon Co. advanced prices (effective Aug. 29) on graphite and carbon electrodes, anodes and miscellaneous shapes 1.5 to 7 per cent.

Pig Iron . . .

Pig Iron Prices, Page 131

Improvement in pig iron shipments is expected this month, although some shops in the East have been hampered by flood damage and slow transportation. The pickup in shipments to foundries has been gradual following the vacation shutdowns and is expected to gain momentum.

Considering the "land office business" done in pig iron before the price rise in July, producers are pleased with the market outlook. Although demand is smaller than it was in June, business in many districts since that month has been 20 to 30 per cent ahead of bookings a year ago. The gain in New England

C

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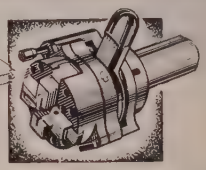

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attributed mainly to heavier melts textile equipment makers.

Builders Iron Foundry Division, I.F. Industries Inc., Providence, I., will discontinue foundry operations about Oct. 28. This shop erates largely on scrap, averaging t more than 10 per cent iron in s melt. It will purchase castings.

ructural Steel Orders Soar

Bookings of fabricated structural eel jumped to an all-time high in aly, amounting to 366,853 tons. his compared with 318,150 tons in une and brought the first seven onths' total to 2,019,264 tons, gainst 1,504,316 tons in the like 954 period—an increase of 34 per ent.

Shipments during July amounted o 217,658 tons, or a decrease of 18 er cent below the total reported for uly, 1954. Hot weather, vacations nd maintenance repairs to facilities ere contributing factors to the ownward trend of shipments, says he American Institute of Steel Conruction, New York. Cumulative hipments this year are 13 per cent elow those for the first seven months of 1954.

The reported backlog for the industry on July 31 stood at 1,638,752 ons, of which 1,008,639 tons were eported available for fabrication uring the following four months.

Canada . . .

Steel Co. of Canada Ltd., Hamilton, Ont., increased prices $4 a ton on finished steel products. New base prices per 100 lb, f.o.b. Hamilton, are:

Hot-rolled carbon bars, $4.80; carbon plates, $4.85; hot-rolled sheets, $4.50; cold-rolled sheets, $5.45; galvanized sheets, $6.05; wire rods, $4.925.

The steel price advance follows a recent wage settlement. Stelco employees got increases of about 13 cent per hour, says Lee T. Craig, vice president. Higher prices for raw materials also were contributing causes for the upward revision in prices. Mr. Craig added: "Our present price increase on flat-rolled products is not so large as the reduction which we made some months ago."

Production of primary iron and steel shapes in Canada increased to 440,516 tons in March from 376,891 tons in February and 324,363 tons in March, 1954. Shipments of primary shapes in March totaled 290,430 net tons, against 239,302 tons in February and 229,400 tons in March, 1954.

Ores

Lake Superior Iron Ore
(Prices effective for the 1955 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports)

Old range bessemer	$10.40
Old range nonbessemer	10.25
Mesabi bessemer	10.25
Mesabi nonbessemer	10.10
Open-hearth lump	11.25
High phosphorus	10.00

Eastern Local Iron Ore
Cents per unit, deld. E. Pa.

Foundry and basic 52-62% concentrates contract	17.00-18.00

Foreign Iron Ore
Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60-68%	20.00
N. African hemanite (spot)	nom. 18.00-20.00
Brazilian iron ore, 68-69% (spot)	24.00-26.00

Tungsten Ore
Net ton unit, before duty

Foreign, wolframite, good commercial quality	$33.50
Domestic, scheelite, mine	63.00

Manganese Ore
Mn 48%, nearby, 95c-$1.05 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; 46-47%, 75c-80c.

Chrome Ore
Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and African

48% 2.8:1	nom. $45.00-$50.00
48% 3:1	42.00-44.00
48% no ratio	34.00

South African Transvaal

44% no ratio	$19.00-$20.00
48% no ratio	32.00

Domestic
Rail nearest seller

18% 3:1	$39.00

Molybdenum

Sulphide concentrate, per lb of Mo content, mines, unpacked	$1.00

Antimony Ore
Per unit of Sb content, c.i.f. seaboard

56-60%	$3.50-$3.75
60-65%	3.75-3.90

Vanadium Ore
Cents per lb V_2O_5 content, deld. mills

Domestic	31.00

Refractories

Fire Clay Brick (per 1000)
High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., $122; Salina, Pa., $127; Niles, O., $133.
Super-Duty: St. Louis, $150.

Silica Brick (per 1000)
Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., Hawston, Pa., $128; Warren, Niles, O., Hays, Pa., $133; Morrisville, Pa., $131.50; E. Chicago, Ind., Joliet, Rockdale, Ill., $138; Lehigh, Utah, $144; Los Angeles, $151.
Super Duty: Hays, Sproul, Hawston, Pa., Warren, Windham, O., Athens, Tex., $145; Morrisville, Pa., Niles, O., $148; Joliet, Ill., $151; Curtner, Calif., $163.

Semisilica Brick (per 1000)
Clearfield, Pa., $139; Philadelphia, $125; Woodbridge, N. J., $122.

Insulating Fire Brick (per 1000)
2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala., $212.80.

Ladle Brick (per 1000)
Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Mexico, Mo., $88.50; Wellsville, O., $92.50; Clearfield, Pa., Portsmouth, O., $98.

High-Alumina Brick (per 1000)
50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $194; Danville, Ill., $197.
60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Clearfield, Pa., $241; Danville, Ill., $244.
70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $279; Danville, Ill., $281; Clearfield, Pa., $286.

Sleeves (per 1000)
Reesdale, Johnstown, Bridgeburg, Pa., $157; Clearfield, Pa., $158.50; St. Louis, $169.30.

Nozzles (per 1000)
Reesdale, Pa., $253.70; Johnstown, Pa., $259.20; Clearfield, Pa., $259.40; St. Louis, $259.45; Bridgeburg, Pa., $286.

Runners (per 1000)
Reesdale, Johnstown, Bridgeburg, Pa., $196; Clearfield, Pa., $198; St. Louis, $195.80.

Dolomite (per net ton)
Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, O., Gibsonburg, Narlo, O., $15; Thornton, McCook, Ill., $15.60; Dolly Siding, Bonne Terre, Mo., $14.

Magnesite (per net ton)
Domestic, dead-burned, bulk, ½-in. grains with fines: Chewelah, Wash., $40; Luning, Nev., $40. ⅝-in. grains with fines: Baltimore, $66.40.

Metallurgical Coke

Price per net ton
Beehive Ovens

Connellsville, furnace	$13.25-$14.00
Connellsville, foundry	16.00-17.00

Oven Foundry Coke

Kearney, N. J., ovens	$25.50
Camden, N. J., ovens	25.00
Everett, Mass., ovens	
New England, deld.	*27.05
Chicago, ovens	25.75
Chicago, deld.	27.25
Terre Haute, Ind., ovens	25.50
Milwaukee, ovens	26.25
Indianapolis, ovens	25.50
Cincinnati, deld.	27.10
Painesville, O., ovens	26.25
Cleveland, deld.	28.18
Erie, Pa., ovens	25.00
Birmingham, ovens	22.65
Cincinnati, deld.	27.58
Buffalo, ovens	*25.75*
Buffalo, deld.	*27.00*
Lone Star, Tex., ovens	*19.50*
Philadelphia, ovens	25.00
Swedeland, Pa., ovens	25.00
St. Louis, ovens	
St. Louis, deld.	26.00
St. Paul, ovens	25.00
Detroit, ovens	26.25
Detroit, deld.	27.25
Pontiac, deld.	27.81
Saginaw, deld.	29.33

*Or within $4.55 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	32.00-35.00
Industrial xylol	32.00-35.00

Per ton, bulk, ovens

Ammonium sulphate	$42-$45
Birmingham area	42.00†

†With port equalization against imports.
Cents per pound, producing point
Phenol: Grade 1, 14.00; Grade 2-3, 13.50; Grade 4, 15.50; Grade 5, 14.25

Fluorspar

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $38-$39; 70%, $35-$36; 60%, $31-$32. Imported, net tons, duty paid, metallurgical grade: European, $31-$33; Mexican, $25.50.

Electrodes

Threaded with nipple, unboxed, f.o.b. plant

GRAPHITE

Diam (Inches)	Length	Per 100 lb
2	*24*	*$52.50*
2½	*30*	*33.75*
3	*40*	*32.00*
4	*40*	*30.25*
5⅛	*40*	*30.00*
6	*60*	*27.25*
7	*60*	*26.75*
8, 9, 10	*60*	*24.25*
12	*72*	*27.25*
14	*60*	*23.50*
16	*72*	*22.50*
17	*60*	*23.00*
18	*72*	*22.50*
20	*72*	*22.25*

CARBON

8	*60*	*12.10*
10	*60*	*11.80*
12	*60*	*11.75*
14	*60*	*11.70*
14	*72*	*10.85*
17	*60*	*10.75*
17	*72*	*10.35*
20	*84*	*10.30*
20	*90*	*10.10*
24	*72, 84*	*10.30*
24	*96*	*10.05*
30	*84*	*10.20*
40, 35	*110*	*9.90*
40	*100*	*9.90*

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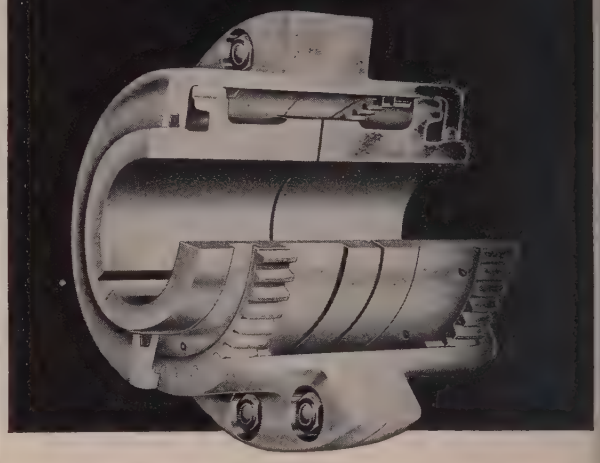

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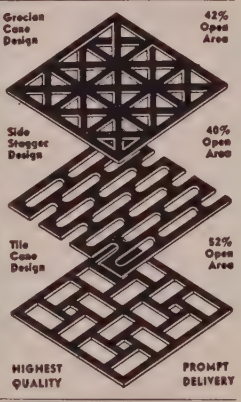

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crap . . .

Scrap Prices, Page 146

Pittsburgh — Amid rumors that lls are paying as little as $42 per n for No. 1 heavy melting in un-blicized deals, brokers report few rge-scale purchases of blast fur-ce scrap. They are paying $43 a n for No. 1 steel, indicating that is market reached its peak in late ugust and has leveled off. Mills ve had difficulty reaching 100 per nt of capacity, so their needs are mewhat less than they had ex-cted.

Despite this reduction in quota-ons, other grades have continued eir improvement. Cast iron grades creased in price $1 to $4 last week. ails sold for $1 a ton more.

Philadelphia—The scrap market is uiet here, with prices firm and un-anged throughout the list. No eakness appears in early prospect. lood damage in certain eastern reas has retarded collections tem-orarily, but will augment suppy a ttle later.

New York—Scrap brokers have dvanced buying prices to $40.50-41.50 for No. 1 heavy melting and o. 1 bundles; and to $20-$21 for ixed borings and turnings. Prices n other grades are unchanged, al-hough the market undertone is trong.

Boston—Borings and turnings are lightly firmer in the scrap market ere, but other steel scrap grades re unchanged for the most part. ew buying is light, and the move-ent of material has been slowed y transportational difficulties. The argest scrap consumer in New Eng-and issued no buying orders through ugust for shipment to Worcester, lass.

Cleveland — Additional sales of crap on industrial lists substantiate resent price levels. Production crap on lists just closed moved at rices higher than quoted levels, con-inuing the premiums for this type aterial. At present, a major por-ion of local scrap is moving outside he normally served area, indicating here is a larger supply than mills ere are willing to buy at asking evels. At the same time, mills are eportedly warning officials in Wash-ngton of a growing tightness in upplies. Brokers are of the opinion hat the refusal of mills to place or-ers may work a hardship on them ater, especially when the movement f scrap is impeded by cold weather.

Buffalo—The scrap market is hold-ng its own here. While mill buying s expected during the coming week, new purchases within the current price range have been made by consumers in the Ohio Valley area. Supplies are ample and the movement of scrap is heavy.

Cast scrap sales are being made also within present price ranges.

Cincinnati—You can get an even bet here that there will be no change in prices after industrial lists close. Indications of softness and firmness seem to balance. Everyone—dealers, brokers and mills—is awaiting the close of the lists.

Chicago—Scrap price tone holds steady. The future trend depends upon buying action of important consumers in the area. One user usually makes known before the month's end the prices he will pay for leading grades in the month ahead; that action was delayed in August when he extended orders for that month to Sept. 15. With the fourth quarter steelmaking rate rising, increased consumption of scrap is expected. Demand for cast grades has tapered, with plants of International Harvester Co. closed by strike for the second week.

St. Louis—The scrap market is quiet. Mills continue to resist price markups. Brokers are reluctant to accept many forward orders at current quotes. Rail items, especially rerollers, continue in short supply and brisk demand. Rural collections of scrap are improving, with much better shipments expected soon.

Birmingham — Electric furnace scrap prices continue to inch higher; some special grades advanced as much as $2 last week. Open-hearth scrap consumers are staying out of the market rather than meet export prices. Foundries, also, are refusing to pay more than the prices established a few weeks ago; some are buying practically no scrap, preferring to use straight pig iron. A few small sales of cupola cast have been made as high as $48 and $49.

Los Angeles—Most dealers found August a shade less active than July, but over 10 per cent better than last year. With the anticipated summer slump failing to materialize, dealers are confident that the third quarter will be best they've enjoyed in several years.

San Francisco—The pressure is on for another lift in steel scrap prices. Sellers are "hollering" for more money; buyers are silent.

Seattle—No. 1 and No. 2 heavy melting advanced $2 a ton to $35 and $31, respectively. Other scrap prices are unchanged but firm. The current rise is attributed to heavy local consumption and export pressure. Receipts are fair and are expected to increase under the higher schedule. Trading is active, with sufficient surplus available for overseas shipment in limited volume.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 143

Lone Star Steel Co., Dallas, advanced coke prices, effective Aug. 29. New prices on a net ton, f.o.b. cars, Lone Star, Tex., basis are: Foundry coke, $19.50; egg coke, $18; and furnace coke, $17.50.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

12,300 tons, Seagram building, 375 Park Ave., New York, to Bethlehem Steel Co., Bethlehem, Pa., through George A. Fuller Co., New York, general contractor.

3400 tons, towers, 138-kv transmission line, Erie Mining Co., Taconite, Minn., to Bethlehem Steel Co., Bethlehem, Pa.

2600 tons, power plant, Virginia Electric Power Co., to American Bridge Division, U. S. Steel Corp., Pittsburgh; Stone & Webster Engineering Corp., Boston, engineer-contractor.

1165 tons, office building, 72 Wall St., New York, to Harris Structural Steel Co., that city; George A. Fuller Co., New York, general contractor.

1075 tons, transmission towers, Consolidated Edison Co., Pleasantville, N. Y., to American Bridge Division, U. S. Steel Corp., Pittsburgh.

1005 tons, St. Lawrence project 9-21, New York State Power Authority, Messena, N. Y., to American Locomotive Co., New York.

1000 tons, power plant addition, Transit Authority, New York, to Lehigh Structural Steel Co., Allentown, Pa.

985 tons, research center, Esso-Standard Oil Co., Linden, N. J., to Grand Iron Works, New York.

960 tons, crushing plant, Erie Mining Co., Aurora, Minn., to Bethlehem Steel Co., Bethlehem, Pa.

820 tons, service building, Hecht Co., to Maryland Steel Co., through Abbott-Merkt & Co., all of Baltimore.

555 tons, three bridges, interchange, Massachusetts turnpike, West Springfield, Mass., to Phoenix Bridge Co., Phoenixville, Pa.; Henley-Lundgren Co., Shrewsbury, Mass., general contractor.

425 tons, building, St. Rose Free Home for

(*Please turn to page* 148)

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Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Aug. 31	$43.83
Aug. 24	44.33
July Avg.	39.67
Aug. 1954	28.80
Aug. 1950	40.00

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania. *Revised.

PITTSBURGH

(Delivered consumer's plant)

No. 1 heavy melting	*43.00**
No. 2 heavy melting	*40.00**
No. 1 bundles	*43.00**
No. 2 bundles	*35.00**
No. 1 busheling	*43.00**
Machine shop turnings	27.00-28.00
Mixed borings, turnings	27.00-28.00
Short shovel turnings	31.00-32.00
Cast iron borings	31.00-32.00
Cut structurals, 3 ft lengths	48.00-49.00
Heavy turnings	42.00-43.00
Punchings & plate scrap	48.00-49.00
Electric furnace bundles	47.00-48.00

Cast Iron Grades

No. 1 cupola	*41.00-42.00*
Charging box cast	*37.00-38.00*
Heavy breakable cast	*37.00-38.00*
Unstripped motor blocks	*29.00-30.00*
No. 1 machinery cast	*45.00-46.00*

Railroad Scrap

No. 1 R.R. heavy melt.	47.00-48.00
Rails, 2 ft and under	*54.00-55.00*
Rails, 18 in. and under	*55.00-56.00*
Rails, random lengths	*51.00-52.00*
Railroad specialties	52.00-53.00

Stainless Steel Scrap

18-8 bundles & solids	265.00-275.00
18-8 turnings	120.00-130.00
430 bundles & solids	100.00-105.00
430 turnings	60.00-65.00

*Brokers' buying price.

CLEVELAND

(Delivered consumer's plant)

No. 1 heavy melting	43.50-44.50
No. 2 heavy melting	32.00-33.00
No. 1 bundles	43.50-44.50
No. 2 bundles	29.00-30.00
No. 1 busheling	43.50-44.50
Machine shop turnings	23.00-24.00
Mixed borings, turnings	27.00-28.00
Short shovel turnings	27.00-28.00
Cast iron borings	27.00-28.00
Low phos.	45.00-46.00
Cut structural plates 2 ft and under	48.00-49.00
Alloy free, short shovel turnings	31.00-32.00
Electric furnace bundles	43.50-44.50

Cast Iron Grades

No. 1 cupola	47.00-48.00
Charging box cast	40.00-41.00
Stove plate	46.00-47.00
Heavy breakable cast	37.00-38.00
Unstripped motor blocks	29.00-30.00
Brake shoes	35.00-36.00
Clean auto cast	48.00-49.00
Burnt cast	37.00-38.00
Drop broken machinery	48.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	45.00-46.00
R.R. malleable	51.00-52.00
Rails, 2 ft and under	54.00-55.00
Rails, 18 in. and under	55.00-56.00
Rails, random lengths	49.00-50.00
Cast steel	46.00-47.00
Railroad specialties	52.00-53.00
Uncut tires	47.00-48.00
Angles, splice bars	53.50-54.50
Rails, rerolling	60.00-61.00

Stainless Steel

(Brakers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	275.00-280.00
18-8 turnings	130.00-140.00
430 clips, bundles, solids	90.00-100.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer's plant)

No. 1 heavy melting	46.00-47.00
No. 2 heavy melting	35.00-36.00
No. 1 bundles	46.00-47.00
No. 2 bundles	32.00-33.00
No. 1 busheling	46.00-47.00
Machine shop turnings	24.00-25.00
Short shovel turnings	29.00-30.00
Cast iron borings	29.00-30.00
Low phos.	46.00-47.00
Electric furnace bundles	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	47.00-48.00

CHICAGO

No. 1 heavy melting	41.00-43.00
No. 2 heavy melting	33.00-34.00
No. 1 factory bundles	43.00-44.00
No. 1 dealer bundles	40.00-41.00
No. 2 bundles	31.00-32.00
No. 1 busheling	41.00-43.00
Machine shop turnings	27.00-28.00
Mixed borings, turnings	29.00-30.00
Short shovel turnings	29.00-30.00
Cast iron borings	29.00-30.00
Cut structurals, 3 ft	45.00-46.00
Punchings & plate scrap	46.00-47.00

Cast Iron Grades

No. 1 cupola	46.00-47.00
Stove plate	36.00-37.00
Unstripped motor blocks	32.00-33.00
Clean auto cast	50.00-51.00
Drop broken machinery	50.00-51.00

Railroad Scrap

No. 1 R.R. heavy melt.	45.00-46.00
R.R. malleable	51.00-52.00
Rails, 2 ft and under	56.00-57.00
Rails, 18 in. and under	57.00-58.00
Angles, splice bars	53.00-54.00
Rails, rerolling	64.00-65.00

Stainless Steel Scrap

18-8 bundles & solids	265.00-275.00
18-8 turnings	140.00-150.00
430 bundles & solids	100.00-105.00
430 turnings	45.00-50.00

Chicago Mercantile Exchange
(Week ended Aug. 31)

No. 1 Heavy Melting

	High	Low	Close
Oct.	39.50	39.50	39.50
Jan.	....	....	....

Sales (160-ton units): 5 October.

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	39.00
No. 2 heavy melting	29.00
No. 1 bundles	39.00
No. 2 bundles	27.00
No. 1 busheling	39.00
Machine shop turnings	21.00
Mixed borings, turnings	21.00
Short shovel turnings	23.00
Punchings & plate scrap	44.00

Cast Iron Grades

Charging box cast	32.00
No. 1 cupola	39.00
Stove plate	32.00
Heavy breakable	32.00
Unstripped motor blocks	22.00
Clean auto cast	42.00
Malleable	35.00

BIRMINGHAM

No. 1 heavy melting	32.00-33.00
No. 2 heavy melting	28.00-29.00
No. 1 bundles	32.00-33.00
No. 2 bundles	24.00-25.00
No. 1 busheling	32.00-33.00
Cast iron borings	*17.00-18.00*
Short shovel turnings	25.00-26.00
Machine shop turnings	*21.00-22.00*
Electric furnace bundles	34.00-35.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	46.00-47.00
Stove plate	43.00-44.00
Bar crops and plate	40.00-41.00
Structural plate, 2 ft.	39.00-40.00
Unstripped motor blocks	35.00-36.00
Charging box cast	27.00-28.00
No. 1 wheels	36.00-37.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00-39.00
Rails, 2 ft and under	44.00-45.00
Rails, 18 in. and under	50.00-51.00
Rails, rerolling	53.00-54.00
Rails, random lengths	*46.00-47.00*
Angles, splice bars	*47.00-48.00*

PHILADELPHIA

(Delivered consumer's plant)

No. 1 heavy melting	46.00-47.00
No. 2 heavy melting	40.00-41.00
No. 1 bundles	46.00-47.00
No. 2 bundles	36.00-37.00
No. 1 busheling	46.00-47.00
Electric furnace bundles	47.50
Machine shop turnings	28.00-28.50
Mixed borings, turnings	27.00-28.00
Short shovel turnings	30.50-31.00
Structurals & plate	48.00-49.00
Heavy turnings	42.00
Couplers, springs, wheels	50.00
Rail crops, 2 ft & under	54.00

Cast Iron Grades

No. 1 cupola	36.00-38.50
Malleable	50.00
Heavy breakable cast	45.00
Drop broken machinery	47.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*40.50-41.50*
No. 2 heavy melting	37.00-38.00
No. 1 bundles	*40.50-41.50*
No. 2 bundles	31.00-32.00
Machine shop turnings	20.00-21.00
Mixed borings, turnings	*20.00-21.00*
Short shovel turnings	22.00-23.00
Low phos. (structural & plate)	42.00

Cast Iron Grades

No. 1 cupola	33.00-34.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	37.00-38.00

Stainless Steel

18-8 sheets, clips, solids	270.00-275.00
18-8 borings, turnings	135.00-140.00
430 sheets, clips, solids	115.00-120.00
410 sheets, clips, solids	100.00-105.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	30.00-31.00
No. 1 bundles	35.50-36.50
No. 2 bundles	26.50-27.50
Machine shop turnings	*18.50-19.00*
Mixed borings, turnings	*21.50-22.00*
Short shovel turnings	*22.50-23.00*
No. 1 cast	30.00-31.00
Mixed cupola cast	28.00-29.00
No. 1 machinery cast	35.00-36.00

BUFFALO

No. 1 heavy melting	39.00-40.00
No. 2 heavy melting	36.00-37.00
No. 1 bundles	39.00-40.00
No. 2 bundles	33.00-34.00
No. 1 busheling	39.00-40.00
Mixed borings, turnings	29.00-30.00
Machine shop turnings	27.00-28.00
Short shovel turnings	30.00-31.00
Cast iron borings	30.00-31.00
Low phos.	45.00-46.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	40.00-41.00
No. 1 machinery	43.00-44.00

Railroad Scrap

Rails, random lengths	47.00-48.00
Rails, 2 ft and under	51.00-52.00
Railroad specialties	48.00-49.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	41.50-42.50
No. 2 heavy melting	35.50-36.50
No. 1 bundles	41.50-42.50
No. 2 bundles	33.50-34.50
No. 1 busheling	41.50-42.50
Machine shop turnings	28.00-29.00
Mixed borings, turnings	24.00-25.00
Short shovel turnings	31.00-32.00
Cast iron borings	24.00-25.00
Low phos., 18 in.	45.00-46.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Heavy breakable cast	38.00-39.00
Charging box cast	38.00-39.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	43.00-44.00
Rails, 18 in. and under	52.00-53.00
Rails, random lengths	45.00-46.00

†Nominal

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	36.50
No. 2 heavy melting	34.00
No. 1 bundles	36.50
No. 2 bundles	29.50
Machine shop turnings	*26.00*
Short shovel turnings	27.00

Cast Iron Grades

No. 1 cupola	43.00
Charging box cast	*36.00*
Heavy breakable cast	*36.00*
Unstripped motor blocks	35.00
Brake shoes	36.00
Clean auto cast	46.00
Stove plate	37.00

Railroad Scrap

No. 1 R.R. heavy melt.	44.00
Rails, 18 in. and under	*53.00*
Rails, random lengths	48.00
Rails, rerolling	62.00
Angles, splice bars	50.00

SEATTLE

(Delivered consumer's plant)

No. 1 heavy melting	*35.00*
No. 2 heavy melting	*31.00*
No. 1 bundles	28.00
No. 2 bundles	23.00
No. 3 bundles	19.00
Machine shop turnings	15.00-16.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings	15.00-16.00
Electric furnace, No. 1	42.00-44.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	*35.00*
Heavy breakable cast	30.00
Unstripped motor blocks	29.00
No. 1 wheels	*35.00*
Stove plate (f.o.b. plant)	25.00
Brake shoes	28.00-29.00

Railroad Scrap (Delivered consumer's plant)

Rails, random lengths	33.00

LOS ANGELES

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	32.00
No. 2 bundles	25.00
Machine shop turnings	10.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	43.00-45.00

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	32.00
No. 2 bundles	27.00
No. 1 busheling	32.00
Machine shop turnings	12.00
Mixed borings, turnings	12.00
Short shovel turnings	14.00
Cast iron borings	14.00
Cut structurals	34.00
Heavy turnings	12.00
Punchings & plate scrap	32.00

Cast Iron Grades

No. 1 cupola	45.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast	36.00
Unstripped motor blocks	30.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	48.00

HAMILTON, ONT.

(Delivered prices)

No. 1 heavy melting	38.50
No. 2 heavy melting	35.50
No. 1 bundles	38.50
No. 2 bundles	32.50
Mixed steel scrap	32.50
Mixed borings, turnings	17.00
Rails, remelting	47.50
Busheling, new factory: Prepared	36.50
Unprepared	32.50
Short steel turnings	21.00

Cast Iron Grades†

No. 1 machinery cast	42.00-45.00

†F.o.b., shipping point.

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PERU 1, ILLINOIS

(*Concluded from page* 145)

Cancer, New York, to Harris Structural Steel Co., that city; Vermilyea-Brown Co., New York, general contractor.

400 tons, plant expansion, Wenatchee, Wash., Alcoa's aluminum project, to Bethlehem Pacific Coast Steel Corp., Seattle.

390 tons, state bridge, Route 17, section 9B, Bergen county, N. J., to Schacht Steel Co., New York; Johnson, Drake & Piper Co., New York, general contractor.

360 tons, district house salon, Western Electric Co., Cleveland, to American Bridge Division, U. S. Steel Corp., Pittsburgh.

315 tons, 566-ft Oregon state bridge and 120-ft overcrossing, Douglas county, reported to Poole, McGonigle & Dick, Portland, Oreg., general contractor to Hamilton & Thomas, Eugene, Oreg.

275 tons, Reading Railroad bridge, Nicetown, Pa., to Bethlehem Steel Co., Bethlehem, Pa.

260 tons, building, New Jersey Telephone Co., Glen Ridge, N. J., to Oltmer Iron Works, Jersey City, N. J.; James Mitchell Co., general contractor.

210 tons, building, Bins Cement Co., Union Bridge, N. J., through Bethlehem Contracting Co., general contractor, to Nazareth Steel Fabricators, Nazareth, Pa.

235 tons, machine shop, Lebanon, N. J., to Bethlehem Steel Co., Bethlehem, Pa., through F. L. Smidth & Co.

175 tons, state highway bridge, Route 4, sections 6 and 4F, Bergen county, New Jersey to Bethlehem Steel Co., Bethlehem, Pa. Eldora Contracting Co. Inc., New York general contractor.

160 tons, buck stays, Wilputte Coke Oven Division, Allied Chemical & Dye Corp., South Chicago, Ill., to Vierling Steel Co., Chicago.

150 tons, state highway bridge, Lancaster county, Pennsylvania, to High Welding Co., Lancaster, Pa.

140 tons, quartermaster administration building, Fort Dix, N. J., to Allied Steel Co. Lucarelli & Son, Trenton, N. J., general contractor.

135 tons, college buildings, Rockville Center, N. Y., to Schacht Steel Co., New York; Vel Co. Inc., general contractor.

135 tons, Oregon state traffic interchange, Multnomah county, reported to Gundersor Bros. Engineering Co., Portland, Oreg., General Construction Co., Portland, genera award $881,706.

115 tons, warehouse, General Motors Corp., Elizabeth, N. J., to Bethlehem Steel Co. Bethlehem, Pa.; David O. Evans Co., general contractor.

105 tons, garage, Southern New England Telephone Co., Danbury, Conn., to New England Iron Works, New Haven, Conn.

100 tons, galvanized substation steel, to Creamer & Dunlap, Tulsa, Okla., low $29,430 to Bonneville Power Administration.

100 tons, including small reinforcing tonnage women's dormitory, University of Maine Orono, Me., to Bancroft & Martin Rollin Mills Co., South Portland, Me.; Stewart & Williams Inc., Augusta, general contractor.

STRUCTURAL STEEL PENDING

6600 tons, wing buildings, Idlewild airfield New York.

6040 tons, upper roadway, Queensboro bridge New York, contract 7; rebids.

1600 tons, state bridge, Schuylkill expressway Philadelphia county, Pennsylvania; Buckle & Co., Philadelphia, low on general contract.

550 tons, contract G-5, approach work, Philadelphia-Gloucester bridge over Delawar river; bids Sept. 15.

REINFORCING BARS . . .

REINFORCING BARS PLACED

450 tons, Frederick & Nelson department store Bellevue, Wash., to Northwest Steel Rollin Mills Inc., Seattle; Henrik Vallee Co. Inc Seattle, general contractor.

170 tons, state pier and shed, Provincetown Mass., to Plantations Steel Co., Providence R. I.; Westcott Construction Co., Nort Attleboro, Mass., general contractor.

108 tons, Sitkinak Island, Alaska, militar installation, to Bethlehem Pacific Coast Stee Corp., Seattle; J. A. Jones Construction Co. Seattle, general contractor.

100 tons, Alcoa's plant expansion, Wenatchee

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1—AMERICAN GUY DERRICK, Model 4-110, 50-ton cap., steel erectors. 120' mast, 110' boom. New in fall of 1951. Like new cond.

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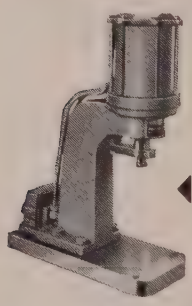

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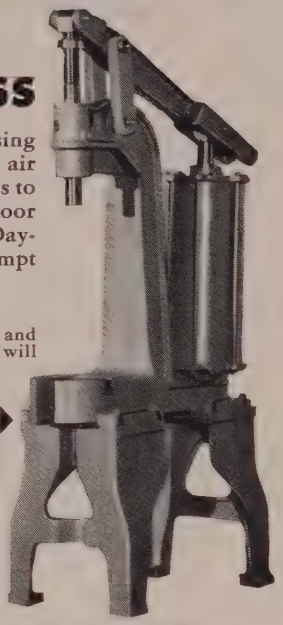

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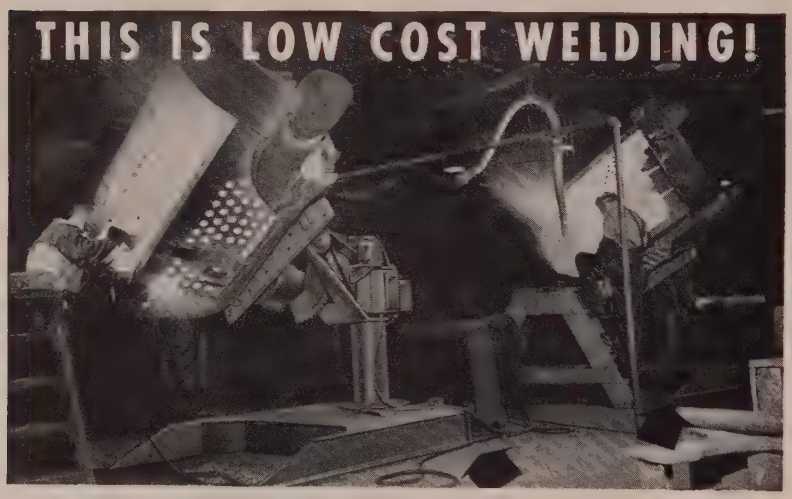

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100 tons, Oregon state highway bridge at Myrtle Creek, to A. H. Saxton & Sons, Corvallis, low $89,161.

100 tons or more, Idaho state Broadway bridge, Boise, general contract to Eagle Construction Co., Boise, low $313,092.

PLATES . . .

PLATES PLACED

1060 tons, 12 tanks, American Oil Co., Albany, N. Y., to Graver Tank & Mfg. Co., Dover, N. J.

655 tons, tanks, American Oil Co., Panama City, Fla., to Graver Tank & Mfg. Co., Dover, N. J.

500 tons, 14 tanks, Texas Oil Co., Westville, N. J., to Graver Tank & Mfg. Co., Dover, N. J.

290 tons, tank, Shell Oil Co., Detroit, to Hammond Iron Works, Warren, Pa.

165 tons, built up piling for Whittier, Alaska, deep sea terminal, to Isaacson Iron Works, Seattle; Patti-MacDonald Co., general contractor.

150 tons, tanks, Cities Service Oil Co., Warners, N. J., to Hammond Iron Works, Warren, Pa.

150 tons, tank, Shell Oil Co., Syracuse, N. Y., to Graver Tank & Mfg. Co., Dover, N. J.

150 tons, tank, Shell Oil Co., Cleveland, Chicago Bridge & Iron Works, Chicago.

100 tons, two refinery vessels, Port Arthur, Tex., to Wyatt Machine & Boiler Works; M. W. Kellogg Co., New York, engineer-contractor.

100 tons or more, five 150-ft length steel barges for Vancouver Tug Boat Co. Ltd., Vancouver, B. C.; general contract to Yarrows Ltd., Victoria, B. C.

100 tons, elevated storage tank, Glasgow, Mont., air base, to Commercial Builders, Moscow, Idaho, by U. S. Engineer, Walla Walla, Wash.

100 tons, municipal stand pipe, Gettysburg, Pa., to Fisher Tank & Welding Co., Chester, Pa.

PIPE . . .

CAST IRON PIPE PLACED

500 tons, 30,410 ft of 10 to 6-in. cast iron pipe, for Sunnyside, Wash., to Pacific States Cast Iron Pipe Co., Seattle.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Wabash, six 1750-hp diesel-electric road switchers, to Electro-Motive Division, General Motors Corp., La Grange, Ill.

RAILROAD CARS PLACED

Alaska Railroad, two sleeping cars, to Pullman-Standard Car Mfg. Co., Chicago.

Erie, 500 fifty-ton boxcars, to Greenville Steel Car Co., Greenville, Pa.

Baltimore & Ohio, 2500 freight cars; 1000 seventy-ton hoppers, to Bethlehem Steel Co., Bethlehem, Pa.; 600 fifty-ton boxcars, to ACF Industries Inc., New York; 500 seventy-ton hoppers, to Pullman-Standard Car Mfg. Co., Chicago; 400 fifty-ton boxcars, to General American Transportation Corp., Chicago.

Illinois Central, 2000 fifty-ton boxcars, to own shops, Centralia, Ill.

Nickel Plate, 500 fifty-ton boxcars, to General American Transportation Corp., Chicago.

Norfolk Southern, 50 fifty-ton gondola cars and 50 fifty-ton pulpwood cars, to Magor Car Corp., New York.

Wabash, 700 freight cars; 500 fifty-ton box cars, to ACF Industries Inc., New York; 100 fifty-ton flat cars and 50 seventy-ton flat cars, to its own shops at Decatur, Ill.; 50 seventy-ton mill-type gondolas, to Bethlehem Steel Co., Bethlehem, Pa.

RAILROAD CARS PENDING

Canadian Javelin Ltd., Montreal, Que., 700 to 1100 gondola-type roller-bearing ore cars; bids asked.

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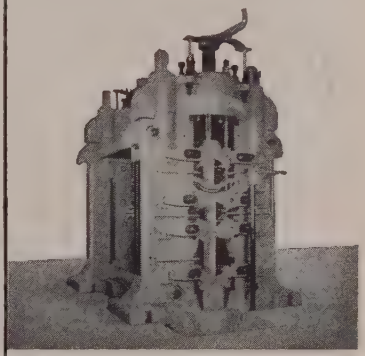
Hyde Park

RED CIRCLE Rolls ALLOY-CHILLED

Rolling Mill Equipment

For more than 50 years Hyde Park Steel Mill equipment has been helping American industry lead the world—equipment such as—



Bar Mills
Merchant Mills
Sheet and Strip Mills
Pinion Stands
Roller Tables
Reduction Drives
Stretcher Levellers
Guillotine Shears
Sheet Mill Shears
Roll Lathes
Special Machinery
Machine Work

For finer finish, long life and greater tonnage, specify Red Circle Rolls.

Hyde Park

FOUNDRY & MACHINE CO.

Hyde Park, Westmoreland Co., Pa.

ROLLS
ROLLING MILL MACHINERY
GREY IRON CASTINGS

For strength, economy and versatility, there's nothing to compare with steel wire. These sparkling bird cages will soon be homes for contented parakeets, canaries and other feathered pets. Advance Specialty Co., Inc., makes a wide range of formed wire products.

Steel Wire for the Birds

Making bird cages and other formed wire products calls for many different kinds of steel wire. At the Advance Specialty Company, Inc., Lansdowne, Pa., you can see a wide variety of wire forms on the production lines: bird cages (as shown above), fan guards, refrigerator shelves, oven and dishwasher racks, bread baskets, toy items, lamp guards, display racks, etc.

Turned out by the thousands at the Advance Specialty plant, each formed wire product has its specific requirements as to the type of wire. Some products are made from our bethanized wire, which has a tight, uniform coating of pure, sparkling zinc applied by our electrolytic process. Other products, made from bright wire, are welded and formed before being electro-plated. In supplying wire for these applications, our mills pay careful attention to such important details as temper, strength, uniform gage and surface finish.

Bethlehem makes just about every kind of steel wire. Some are general-purpose grades. Others are tailored to meet the requirements of such products as cold-headed screws, upholstery springs, bicycle spokes, lock washers, brush handles, mechanical springs, and armor wire for cables.

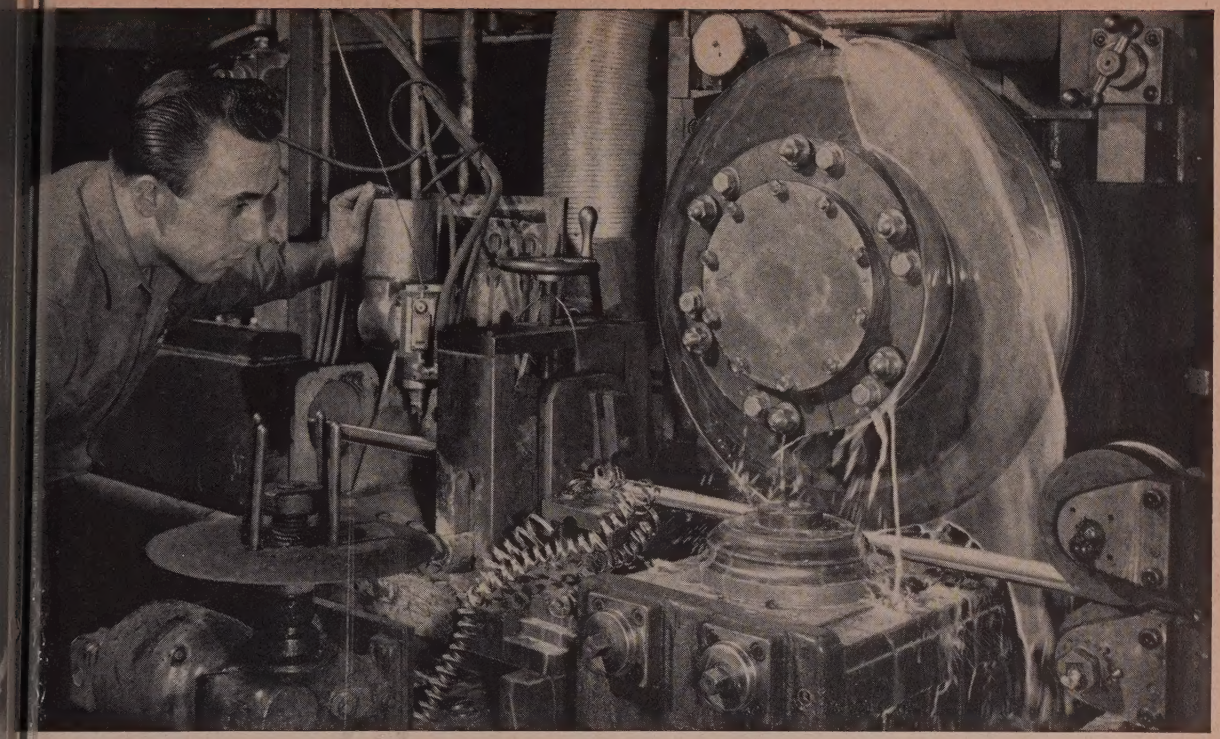
The steel wire that's best for your product is likely to be a grade and quality we're producing right now. You say the word, and we'll be glad to have a Bethlehem man give you prices, delivery and other details. Just put in a phone call to the nearest Bethlehem sales office or write to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation.

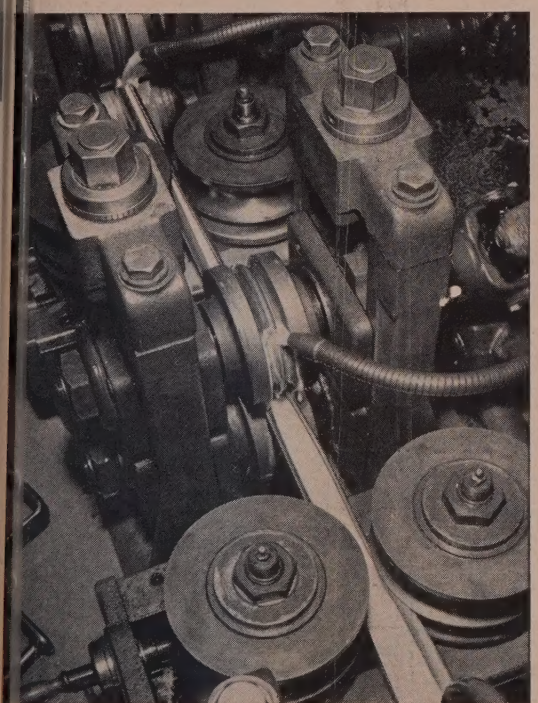
BETHLEHEM STEEL

BETHLEHEM STEEL



Excess weld metal spirals off formed tubing after seam is butt-welded. Nodulizing gun under operator's left hand then applies spelter coat over seam weld, following which tubing is cooled and sheared to desired length.

Tubing made from galvanized sheet



thcon galvanized sheet passes in continuous ribbon through form- mill at Welded Tube Company of America plant in Philadelphia.

This tubing is formed from galvanized coils, and it's such a hot item today because it is strong yet light and inexpensive. Typical uses: TV antenna masts, clothes poles, fence posts, playground equipment.

Tubing is one of several interesting new applications of galvanized steel made possible by the continuous galvanizing process. This method bonds the zinc much more tightly than conventional hot-dipping, and makes the finished steel available in long coils, rather than cut lengths only. It is one of the reasons why our galvanized steel volume has swelled tremendously in the last four years.

But the fabrication of galvanized steel sheets in these new uses is of course only one of dozens of lines of manufacturing whose consumption of Bethlehem sheets has increased enormously in the past few years. Put them all together, and add the continuing needs of long-time big users, and it's easy to see why Bethlehem is being called on to produce more hot-rolled and cold-rolled sheets than ever before.

We are doing just that. Our sheet mills at Lackawanna and Sparrows Point are turning out sheets at a record pace. Early this year we set a new all-time production high. The next month we topped even that. And we're continuing hard at it until production and consumption come into line.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

No. 4 in a series

CONE

WITH

You get demonstration of your work and complete job development record

UP

Cone submits samples of your work

STEP

Cone makes recommendations

You send print to Cone

No "automatic" user can afford to be out of touch with the latest developments in the use of carbide tools.

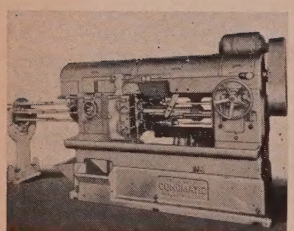
The popularity of the Conomatic Carbide Development program has made necessary larger quarters for increased clientele accommodation.

This innovational Cone service is without obligation of machine purchase and is available to users of any brand of multiple spindle automatic.

It costs nothing to know just how profitable your work might be with modern machines, tools, and know-how.

DATA FOR COMPARISON

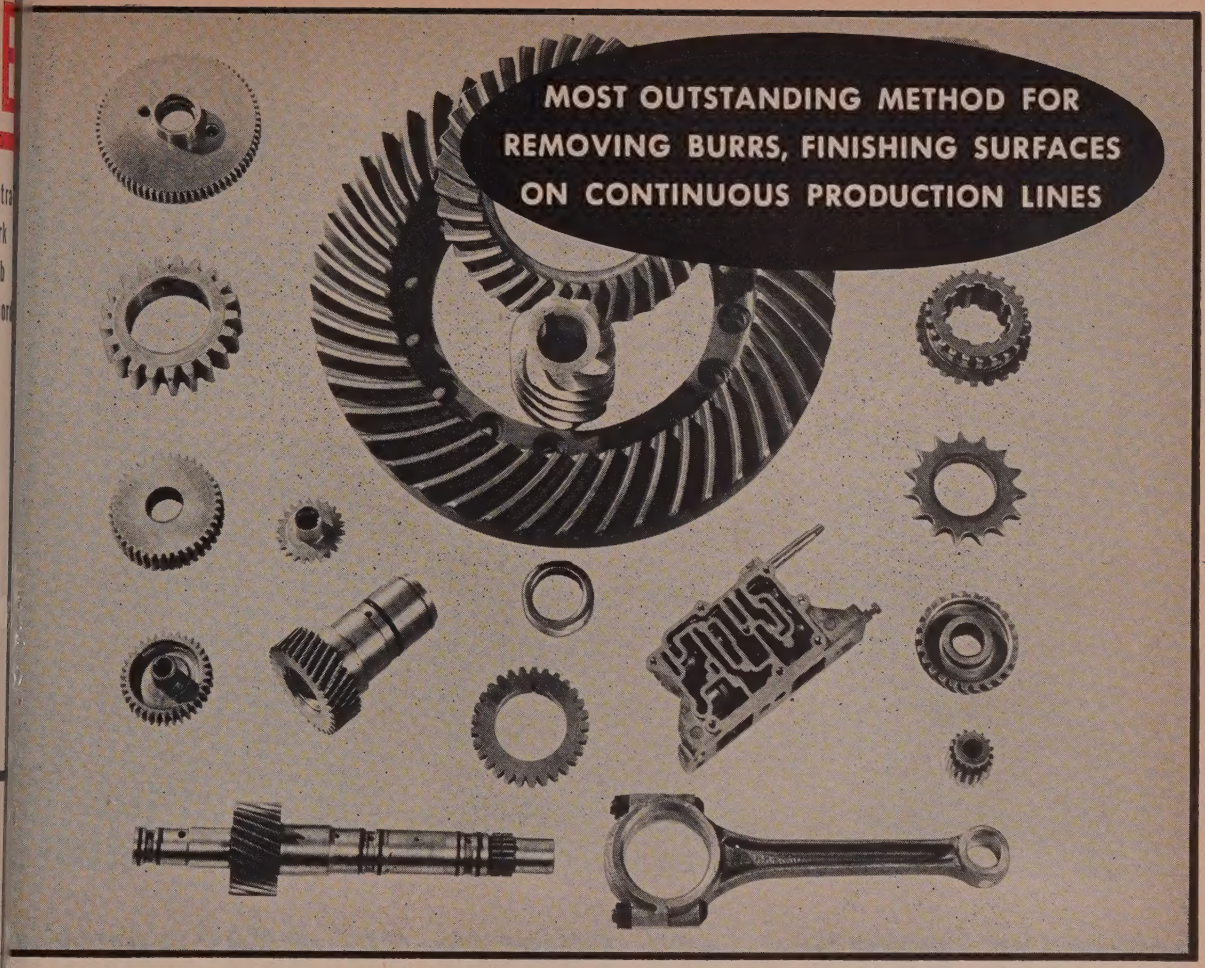
Part.....Spec. Cap Screw	Length.....4 1⁷⁄₃₂" Cutoff 2" Thread
Machine.....1⅝" Conomatic	
Tools.....100% Carbide Tipped	RPM.....885 Work Spdl. 580 Th'd Spdl. 1465 Total Eff'd.
Material.....8742	
Stock Size.....1" Across Flats	Time.....14 Secs.



Conomatic

Send for particulars on "Four Steps With Cone"

CONE AUTOMATIC MACHINE COMPANY, INC., WINDSOR, VT., U.S.A.



BRUSHAMATION BY OSBORN

The parts shown above are typical of the work you can now handle with Osborn's line-production power brushing method... *BRUSHAMATION.*

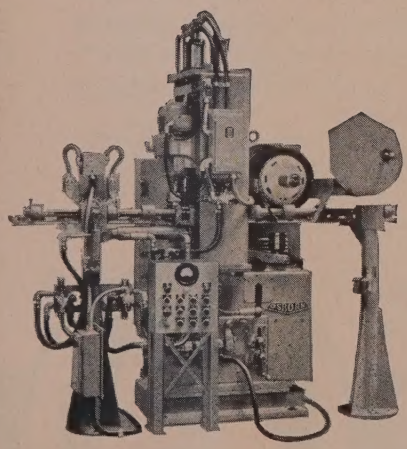
COMPLETELY INTEGRATED...Osborn's Automated Brushamatic® Equipment fits right into your production line.

ELIMINATES BOTTLENECKS. It is now possible to remove burrs, blend surface junctures, remove weld scale, clean parts on a continuous line-production basis.

AUTOMATES FINISHING OPERATIONS . . . takes parts right from your production lines, feeds them to rotating power brushes, delivers them precision-finished to micro-tolerances where necessary

. . . all without manual handling.

Qualified engineers will show how you can benefit with automated brushing at the Osborn Booth 856, Production Engineering Show, Chicago, Sept. 6-17 and at Booth 718, The Metal Show, Philadelphia, Oct. 17-21. *The Osborn Manufacturing Company, Dept. G-36, 5401 Hamilton Avenue, Cleveland 14, Ohio.*



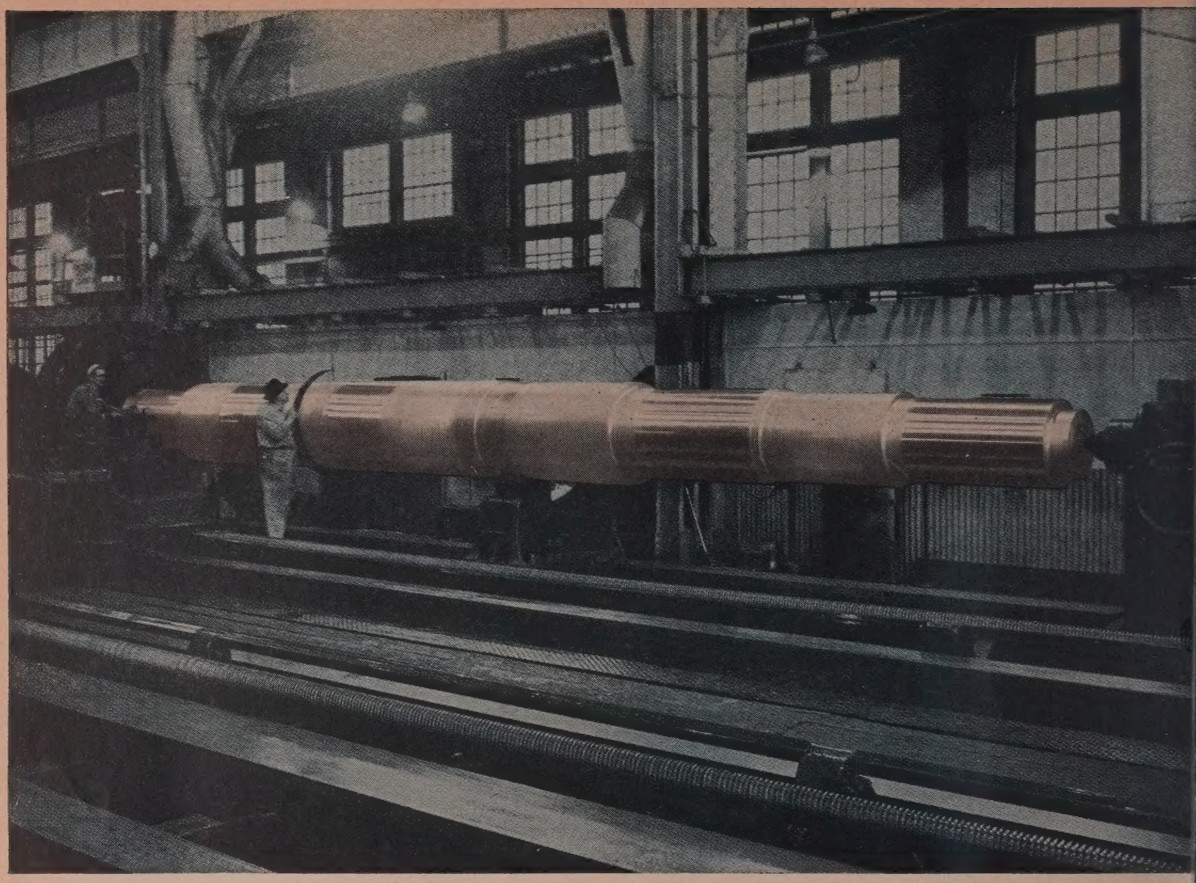
AUTOMATED BRUSHAMATIC®...One of Osborn's integrated production line automatic power brushing machines.

Osborn Brushes

© 1955 The Osborn Manufacturing Company

OSBORN

BRUSHING METHODS • POWER, PAINT AND MAINTENANCE BRUSHES
BRUSHING MACHINES • FOUNDRY MOLDING MACHINES



MIDVALE *DRUM* SHAFT FORGED TO *BEAT* FATIGU

Forge it uniformly . . . finish it to extremely close tolerances . . . and deliver it fast—they were the requirements on this large alloy steel drum shaft for a mine overseas. In record time Midvale poured the ingot, shaped the shaft in its huge presses and had it finished to an overall length of 40 feet 6 inches, diameter of 38 inches with a bore of 7 inches.

This type of service has been routine to the men of Midvale for more than a half a century. They have made a specialty of supplying the mining industry with large forgings and castings of all types. Midvale quality is carefully guarded from the time the ingot is poured until the finished piece is loaded for shipment. Tests and supervised inspections are made in every step of production. Final tests—X-ray, sonic and others as specified—assure sound forgings and stainless steel castings for outstanding performance in the most severe service.

Next time you need shafts, rolls, roll shells, gear rings or high alloy castings get in touch with Midvale. You can be certain of satisfactory service and products.

THE MIDVALE COMPANY- Nicetown, Philadelphia 40, Pa.

Offices: New York, Chicago, Pittsburgh, Washington, Cleveland, San Francisco

MIDVALE

FORGINGS, ROLLS, RINGS, FLANGES, CORROSION AND HEAT RESISTING CASTINGS